MICHIGAN FARMER.

Devoted to Agriculture, Horticulture and Science.

Organ of the State Agricultural Society—the only Agricultural Journal in Michigan.

Established in 1843. | DETROIT, DECEMBER, 1863. | New Series. Vol. 2, No. 6.

THE MICHIGAN FARMER,
A MONTHLY HOME JOURNAL
Devoted to Agriculture, Horticulture, Stock-Raising Mechanics, and all things pertaining to the Farming Interests of Michigan, and Agriculture in general. $1 per year.

WILLIAM S. BOND, GEORGE SNYDER,
PUBLISHERS.

OFFICE Nos. 18 and 20 WOODBRIDGE STREET, (near the corner of Griswold Street,) DETROIT.

Rates of Advertising.

1 square—12 lines,	1 month	$2	each other insertion		$1.
2 "	"	3	"	"	1 50
3 "	"	4	"	"	2 00
4 "	"	5	"	"	2 50
¼ column	"	6	"	"	3 00
½ "	"	$12	"	"	6 00
1 "	one year	40 payable quarterly in adv.			
1 "	do	70	"	"	

CLUB RATES—5 copies $4; 8, $6,25; 10, $7,50; 15, $11,00 21 $14; 25, $17; 30, $20. Premiums of Strawberries, Grape Vines, and Books, for 5, 8, or 10, $1 subscribers.

CONTENTS OF THIS NUMBER.

Page 243 Premiums for 1864.—Great Inducements.
244 The State Agricultural Society, its winter meeting; Corn best adapted to Cultivation above forty degrees North Latitude.
245 Corn, Carrots and Beans; Item.
246 Report of the Commissioner of Internal Revenue.
248 An Inquiry—Crops, &c.; American Tea.
249 Profitable Investment; Item.
250 The Nonpareil Butter Worker; Michigan; Item.
251 Farmers' Associations.
252 Grazing Mowing Grounds; Manure Sheds and Muck.
253 Winter Care of Stock; The Wheat Aphis.
254 Farm Implements and Machinery.
255 How to Improve Wet Land; Fixed Facts in Agriculture.
256 Seeding Land to Grass; Butter Making and Packing.
257 Salt and Cold Water for Swine; Making Butter in Winter; Oxen vs. Horses; Items.
258 Which is the best Grape; Practical Horticulture.
263 Cracking of the Apple and Pear; The Slug-Caterpillar.
264 Ladies' Horticultural Association.
265 Vegetable Locomotion—A Phenomenon.
266 Growing Upland Cranberries; Dairy Farms should not be Overstocked.
267 The Michigan Farmer for 1864.
268 American Pomological Society.
269 Education of Farmers.
271 Structure of Plants.
274 Planting Large and Small Potatoes; Wintering Bees.
275 The Horse in the Stable.
276 Rural Song—No. 3—Harvest All Gathered; Sleep.
277 Endearments of Home; Children's Arms and Legs.
278 Narcissus; The Japan Pinks; The Tea Roses.
279 Verbena Culture; The Rhinoceros' Friend; Language of Insects; The Oak and the Squirrel.
280 Facing down the Lion; The Shepherd's Dog; Mules in Central America; Insects and Grain Eating Birds.
281 Domestic Animals.
282 Doctoring Sick Animals.
283 Apples as Food for Cattle.
284 Cattle Fastenings; Carrots for Horses; Poultry in Winter; Death to Rats.
285 Ryan's The Weather Prophet Speaketh; The Scientific American; The Wool Market.
286 Live Stock Market, &c.; New York Market.
287 Detroit Market; New Advertisements
288-320 Advertisements.

LET ALL IN ARREARS SETTLE UP, AND BEGIN THE NEW-YEAR OUT OF DEBT.

PREMIUMS FOR 1864.—GREAT INDUCEMENTS TO FORWARD "A GREENBACK."

We would call the attention of our readers and the State Press to our splendid premiums for the opening of 1864:

1st. We offer the MICHIGAN FARMER, (one of the largest agricultural monthlies in the Union,) and a *Fine Pocket War Map*, or 25 *Triomph d'Gand* Strawberry Plants, for a new $1 subscriber—best premium ever offered for a single name.

2d. For three new $1 subscribers, 1 *Delaware Grape Vine*, one of the finest known in grape culture, or two of the large hardy *Concord Vines*.

3d. For Five new $1 subscribers, either of the following books which should be in the hands of every farmer in Michigan:

"*Liebig's Natural Laws of Husbandry.*"
"*Jennings's Cattle and their Diseases.*"
"*Randall's Practical Shepherd.*"
"*Barry's Fruit Garden.*"
Or Six of "Kidder's Secrets of Bee-Keeping."

4th. For Eight new $1 subscribers, 250 Triomph d'Gand, or 2 Delaware and 2 Concord vines.

5th. For Ten new $1 subscribers,
One "Liebig's Natural Laws of Husbandry."
One Delaware Vine, Two Concord Vines, and 50 Triomph d' Gand Strawberry Plants, or five varied premiums for ten names.

6th. For the largest list (not less than 75) we offer one **AIKEN'S FAMILY KNITTING MACHINE**, price $75—the most skillful piece of mechanism known—we have knit a pair of socks from it in 12 minutes, it runs 5000 stitches per minute easily. Whoever gets the largest list by February 1st, 1864, secures this useful household article. It is worth more than any sewing machine, as the farmer spin his wool into yarn, manufacture it into socks and realize a profit in the market of 200 per cent. on the raw material.

7th. For the second highest list not less than 50,) **ONE HUNDRED CONCORD VINES**, this enables the person sending a list of fifty to give each a premium, and have *fifty left for his own use* or enough to plant fine vineyard.

8th. For third highest list, (not less than 30) **ONE PAIR OF CHESTER WHITE PIGS**, the

most profitable and best Pork stock now known. These are from the stock of D. P. Bushnell, of Hartford, Trumbull co., Ohio, who took all the premiums at our State Fair of 1862.

These three last premiums will be awarded on 1st of Feb., 1864. The Grape Vines and Strawberries will be open until March, and forwarded in time for early Spring planting, with directions for setting out. The War Map and Books will be sent immediately upon receipt of lists.

No premiums sent unless designated when the subscription is forwarded, as it occupies more time than we can afford to spare, in writing for information as to which premium is wanted.

For Club rates see last page.

We trust that every one of our friends will endeavor to get as goodly a number of subscribers as they can for the New Year. Let them prove their wishes for the success of the MICHIGAN FARMER, not by words, but by efforts to increase its list two-fold the coming year. Let farmers rally and support A HOME PAPER, which has stood unswervingly for the interests of HOME PRODUCERS. If the farmers of Michigan would withdraw their patronage from the foreign agricultural sheets and bestow it at home where it should go, we will agree to publish A WEEKLY PAPER within the next ninety days, which shall be devoted to Agriculture, War and other news, Household Reading, and contain the best Market Reports for their information as to the profitable disposition of their Grain, Wool, Stock, Fruit and Farm Products in general, to be found in Michigan. Shall we receive the requisite support to publish A WEEKLY FARMER'S FAMILY JOURNAL IN THIS STATE?

THE STATE AGRICULTURAL SOCIETY, ITS WINTER MEETING.

The President of the State Agricultural Society, B. Pollett, Esq., and Messrs. A. S. Berry, J. A. Walter, and W. J. Baxter, held a meeting of the business committee in Detroit on the 16th instant. At this meeting, it was resolved that the winter annual meeting of the Executive committee should be held at Ypsilanti, on the second Tuesday of February next, the President, and A. S. Welsh, Esq., together with the Secretary were appointed a committee to make proper preparations for the meeting. The Society now being out of debt, and in a financial condition to be of service to the agricultural interests of the State in other respects than the mere holding of its great annual fair, the President, has suggested and proposed that at the winter meeting, the friends and members of the State Agricultural Society, should be invited to present, and take part in the discussions, relative to what should be proper measures adopt, to promote and further the real design of the Society, which is to stimulate improvement and progress in developing the agricultural and industrial resources of the State. The open meeting and discussion, it is thought will render the executive committee a great service by making them more familiar and better acquainted with the views of the various interests, and have a tendency to make the premium list of the next exhibition more efficient in bringing out for competition many interests that are now dormant. The meeting will also afford an excellent opportunity for the agriculturists themselves to discuss various subjects which are of great importance, such as drainage, breeding of stock, the treatment of different soils, marshes and other matters. In our next number we shall probably be able to call attention to the meeting more directly.

For the Michigan Farmer.

CORN BEST ADAPTED TO CULTIVATION ABOVE FORTY DEGREES NORTH LATITUDE.

MARSHALL, Mich., Dec. 1863.

MESSRS. EDITORS.—There seems to be a difference of opinion among the farmers of Michigan as to which of the two classes of corn, the hard or flint, the soft or dent, it is most desirable to cultivate. In this county the dent has been most extensively raised in accordance with the generally conceded opinion, that the soft corn embracing the different varieties of dent when fed in the ear as is now generally practiced, are better adapted to all feeding purposes, than the harder varieties of flint corn. The practice of feeding corn in the ear particularly to horses and cattle may be considered to say the least of doubtful utility, in view of the greatly increased value of ground feed over unground, as has been repeatedly shown by carefully conducted trials. Every observant feeder is doubtless aware, of the large proportion of corn when fed in the ear to horses and cattle, that passes through the whole digestive canal in its crude state. I am aware that in favorable seasons, the dent when not injured by early frosts, is generally more prolific than the flint.

Still the vicissitudes of climate and other things considered, I very much doubt the propriety of raising it to the utter or almost entire exclusion of the earlier varieties of flint corn. From recent reports of the cultivation of this crop, in the State of Ohio, embracing a more southern latitude than Michigan, it appears that in *only* thirty-four of the eighty-eight counties of that State, does the dent corn *invariably* came to perfection; these counties are all *south* of the National road, or 40 degrees North.

What are the facts as the perfect maturing of the crop in this more northern latitude? I

year we heard no complaints of the dent not fully maturing. The season, however was a remarkable one. There was scarcely a perceptible frost through the month of September and not until late in October. How stands the account this year? I will give my own experience, let others speak for themselves. Last year my Kentucky white dent the most prolific variety with which I am acquainted, yielded over 150 bushels of ears per acre of merchantable corn. The present crop has been most sadly injured by the August and later frosts, nearly one half of the ears being soft and unmerchantable. Another and earlier variety, the yellow dent, but less productive, was comparatively little injured; still the ears lack in appearance the full maturity of the yellow flint grown in the same field. Although the dent out yields the flint, about 15 bushels per acre. I have but little doubt that a careful analysis of these two varieties would show that the excess of nutricious substances in the latter more than compensated for the difference in the yield per acre. The valuable analysis of several varieties of corn made by Dr. J. H. Salsbury, a few years since under the directions of the New York State Agricultural Society, gave unmistakable evidences of the superior value of the northern flint varieties for feeding and fattening purposes. An analysis of several varieties of flint corn gave the following per centage of the most important elements in the formations of fat and muscle.

Zein or glutin	8,96
Oil	4,10
Dextrine or gum	4,12

In the Kentucky white dent the per centage of the same elements, were only—

Zein or glutin	2,72
Oil	2,64
Dextrine or gum	3,08

It should be borne in mind that in these cases the analysis were of corn fully matured. The difference would doubtless have been greater in favor of the flint varieties, when the perfect maturity of the dent had been prevented by early frosts, so frequently the case in latitudes so far north as Michigan. Another important consideration in favor of the earlier varieties, is the larger quantity of valuable fodder which the abundant foliage of the stalks afford the early maturing of the crop, permitting it to be harvest generally before the stalks are injured by the autumnal frosts. Doubtless when the soil is not highly enriched, the dent, with its larger and more vigorous roots penetrating the sub soil and extending over a greater surface, is less affected by our frequent summer droughts than the smaller varieties; this advantage, however, may be almost entirely overcome by high manuring and thorough cultivation, always connected with the production of the largest and most profitable crops. My own practice latterly has been, (which, however, I will readily abandon when a better one is pointed out) to confine the cultivation each year exclusively to neither the dent nor flint, cultivating both as perhaps the most advisable, in consideration of the vicissitudes of climate and other attendant circumstances. I am satisfied that in latitudes so far north as Michigan, the raising of the dent should be confined to the earliest varieties.

WM. R. SCHUYLER.

Corn, Carrots and Beans.

At a late meeting of the Kent County Agricultural Society, Mr. S. M. Pearsall, of Alpine, in this State, made the following exhibit of some of his farm operations for 1863:

"From three acres of ground which was measured off in my field, I harvested 224 bushels of ears of the eight-rowed yellow corn. The ground was sandy loam, plowed last fall and again in spring, and harrowed down and marked off four feet one way by three-and-a-half feet the other, planted the 9th of May, hoed three times, passing through each time both ways with a shove plough.

One-fourth of an acre of land yielded 220 bushels of the long Orange Carrot. The soil is black muck of a sandy character—plowed the first of April, and planted with a seed-drill in rows eighteen inches apart, thinned out and kept clean from weeds.

Of Beans, three and three-fourths acres of land yielded 68 15-60 bushels. Old pasture broken up in the spring, and planted two feet apart one way and ten inches the other."

[The Corn thus averaged 74⅔ bushels of ears to the acre—the Carrots 880, and the Beans about 18⅛ bushels—thus making a very profitable return from seven acres as follows:

Corn,	224 bushel ears	50c.	$112 00
Carrots,	220 "	25c.	55 00
Beans,	68⅛ "	$2,30	156 97
		Total amount at market prices,	$323 97

We have given this estimate of our own to show the readers of the *Michigan Farmer* what a fair return field crops give with proper cultivation. An eighty acre farm worked upon this basis would yield an annual revenue of $3,563 67. Is this not good and profitable farming?—W. S. B.]

CHESTER WHITE HOGS.—This valuable breed originated from crossing a pair Bedfordshire hogs with the best native stock that could be obtained. Their prominent and marked points are—length and depth of carcass, their clean skin, white hair, small offal, and great ease in fattening—which makes the most desirable pork stock that a farmer can have on his lands.

REPORT OF THE COMMISSIONER OF INTERNAL REVENUE.

Increase tax on Tobacco, Native Wines, Cotton, Horned Cattle, Clothing, Money Receipts, and Sundry Documents.

We give below portions of the report of the Commissioner of Internal Revenue, which more especially affects the interests of agriculturists and their products.

TOBACCO.

Tax of five to ten cents per pound on Manufactured and twenty cents per pound on Leaf Tobacco.

The diminished production, owing to the southern rebellion, was far short last year of what it was in previous years.

In 1860 it was, in round numbers, four hundred and twenty-eight millions of pounds. Last year it was only two hundred and eighty millions of pounds. This year, notwithstanding the extensive planting in the Northern and Middle States, the crop is estimated in the last report of the Agricultural Bureau, at only two hundred and fifty-eight millions, being still one hundred and seventy millions of pounds less than in 1860. While the domestic production is thus diminished, the foreign demand has been constantly increasing, and it will not be likely to be seriously affected by the difference in price which its exportation, subject to our excise on the raw material, will occasion. I therefore beg leave to submit the proposition that tobacco be taxed in the leaf in the hands of the producer, and that no drawback be allowed on its exportation in that shape, so that the cost to the foreign manufacturers may be increased to the extent of our excise. If any drawback is to be allowed the proper policy of encouraging and sustaining our own manufacturer against the adverse legislation of a foreign government seems to require that it shall be allowed, if at all, only on the manufactured article. The extent to which the allowance should go is a question of some nicety. The tax on tobacco in the leaf, with all the stems on, might, I think, be fixed with advantage to the revenue, and without injury to the producer, at twenty cents per pound. A light tax, varying from five to ten or twelve cents per pound additional, might be imposed on the manufactured commodity. A drawback on this, from ten to fifteen cents, would give to the domestic manufacturer all the advantages he would desire in the foreign market, and would in some measures countervail the legislation of foreign nations to his prejudice.

The imposition of the tax on tobacco in the leaf is further recommended by the consideration that, united with proper regulations for inspection, it will tend to defeat the fraudulent practices by which the government is now deprived of much revenue due from this source.

TAX ON NATIVE WINES.

Whether the excise on domestic wines—being useless to the consumer as luxuries—ought to be increased, may be questionable. The cultivation of the grape and the manufacture of wine in this country is still in an infant state, and good policy would seem to require that they be encouraged. Though the experience of Europe has shown that the consumption of spirits is not reduced by high rates of duties, it may be in some respects owing to the fact that cheap wines are not furnished to the consumer. If cheap mild wine could be made to supersede spirits as the common liquor of the million, the result would be gratifying, both in a moral and industrial point of view, and any modification of the excise tending in that direction would be desirable. I apprehend, however, that the tax on spirits must ascend to a much higher figure than has yet been proposed, before any appreciable effect will be produced in determining the choice of liquors on the part of those who habitually drink them, and that at all events, in the present needs of the country for increased revenue, a duty of ten cents per gallon on native wines will not be severely felt or be deemed unreasonable. These changes in the amount of duty to be laid on spirituous, vinous and malt liquors seemed to be suggested by common experience and the policy which obtains in every well poised system of taxation. They belong to a class of luxuries which may be properly denominated hurtful, and, if the consumption should happen to be affected by the weight of taxes the result would not be without compensation to the consumer and the country. The duties are now very low, in view of the modes of using the subjects of them. Twenty cents a gallon is but one cent and a quarter for a half pint—a quantity usually sufficient, I presume, for one day's allowance for a moderate drinker. Three times the tax would not be sensibly felt, in a proportionable increase of price. If it would exert any influence on consumption, it would be in favor of the cheaper liquors, which, for that reason, could then better bear some additional duty.

TAX ON COTTON TO BE QUADRUPLED.

Among those annual products of the soil which appear to be proper subjects of tax, and which being needed in large measure by the manufacturing nations of Europe for the support of their industry, may be loaded with heavier duties without serious detriment to our own countrymen, is cotton. That product is now subjected to a duty of one half of one cent per pound. Quardrupling the tax will not, in my opinion, be excessive. So insignificant a sum can be added to the price in the foreign market, without affecting the demand or exciting dangerous competition.

HORNED CATTLE, ETC.

The tax on slaughtered animals may be advantageously adjusted on a somewhat different scale without becoming onerous, viz.: On each head of horned cattled, more than eight weeks old, slaughtered for sale, a tax of thirty cents; and on calves of eight weeks old and less, a tax of five cents per head. On slaughtered swine, exceeding fifty pounds weight, ten cents per head.

CLOTHING AND OTHER ARTICLES OF DRESS.

According to the construction given to the act of July 1, 1862, the manufacturer, of clothing and other articles of dress, whether to order as custom work or for sale generally, was liable to a tax of three per cent ad valorem.

The act of the 3d of March last excempted from duty tailors', milliners', dressmakers' and shoemakers' work, made to order as custom work, to the amount of one thousand dollars, and for any excess beyond that amount levied a duty of one per cent. on the value. The discrimination introduced by the amendatory act does not appear to me to stand on any just principle. It creates an inequality in the percentage which should be avoided, and operates practically in favor of that description of customers who are best able to pay. The thousand dollar exemption provides a limit which is not in accordance with the analogies of the law by which an exemption in all other cases of manufacture, to the amount of six hundred dollars, only, is secured. I perceive no satisfactory reason why the tax on all articles made to order beyond the last mentioned sum in value, and not otherwise provided for, should not be laid at the usual rate of three per cent. ad valorem.

STAMP DUTIES ON MONEY RECEIPTS, ETC.

Among the most satisfactory branches of our excise law must be reckoned that which levies stamp duties on documents and instruments of evidence. This tax is, of all others, the most cheaply and easily collected and most cheerfully borne; and it is believed that in the future development of our system it is the one from which most advantage may yet be expected from a gradual and judicious extension. It is not to be questioned that some of the stamp duties are already heavy enough to represent their full share of the taxation of the country; but there seems to be at little reason to doubt that some others may now be advantageously enlarged. There is at least one very important class of papers exempt on which it would seem just to levy a small duty, namely, receipts for the payment of money. Being of the utmost importance in all transactions, the necessity of making them valid evidence of payment would offer the strongest inducement to having them duly stamped. It is believed that, by subjecting them to one half the duty now required on checks and sight drafts, a considerable revenue might be obtained without seriously burdening any interest. The penny stamp on receipts in England produced, in 1861, two millions two hundred thousand dollars. In this country, with a population much superior in activity and general intelligence, business, such a tax as is here proposed would be quite as productive as the stamp there of double the value.

STAMPS ON SUNDRY DOCUMENTS.

Assignments and transfers of personal property other than instruments of evidence now provided for, by any writing, such as assignments in trust, deeds for the benefit of creditors or others, bills of sale and documents of like nature may well bear a stamp proportioned to the value of the property conveyed. Indentures of apprenticeship, articles of apprenticeship, attested copies of instruments made evidence by law, warrants of distress, writs of execution, letters patent for inventions, leases of personal property, certificates of copyright, commission appointing persons to offices, certificates of admission of attorney or counsellors to practice law, diplomas of medical schools, colleges and universities and certificates of marriages are among the documents which offer themselves in the present needs of the government as eligible subjects of stamp duty, and by a general provision all written or printed instruments not otherwise provided for might, when offered in evidence on the trial or hearing of any civil case at law, before any court or judicial magistrate, be required to have a stamp of small value affixed.

FAST HORSES AND FARM PRODUCE, ETC.

Our license system is also capable of some slight extension, and perhaps requires it, in order to make it operate equally. Conveyances, mercantile agencies, persons whose business it is to buy or sell farm produce for others, and who may be denominated produce brokers, owners and keepers of horse creatures which shall be entered for competition in any public trial of speed, might be justly required to pay license taxes. The same be said as to persons whose business it is to contract for the letting of houses or other real estate, or to collect rent for others, amending the fourteenth section, of the sixty-fourth section by striking from it the word "rent."

WHAT ELSE IS PROPOSED.

To reduce the tax on Life Insurance, making only 50 cents for every $1000.

An increase of 60 cents per gallon on distilled spirits.

An increase of 30 cents per bushel on Malt.

To repeal the drawback on the manufacture of Petroleum.

To increase the tax on hurtful luxuries.

To fix a tax of 4 cents per dozen on bottled Mineral and medicinal waters.

To increase the tax on dogs, diamonds, gold watches, pianos, large looking glasses, and precious stones.

To alter and make more specific the law in regard to goods manufactured for private use.

To tax Brokers and auction sales.

A tax of 2 per cent additional on manufactures.

To punish extreme cases of neglect to comply with the stamp laws.

We have prepared the above for the *Michigan Farmer* in order that its readers may have an idea of the more particular recommendations as relating to farmers, and an outline the Commissioners recommendations otherwise.—W. S. B.

For the Michigan Farmer.

AN INQUIRY—CROPS, &c.

I should like to hear through the medium of the *Michigan Farmer*, the experience of those who have reclaimed marsh lands their mode of proceedure costs—the crops best adapted, and profit derived therefrom. I have considerable marsh land which I wish to improve, and as means and labor are scarce, I should like to avail myself o the experience of others, hoping that I might profit thereby.

Crops in this locality are light, the average of wheat not more than eight bushels to the acre, as it was injured much in the fall and spring by the insect at the root, and later by the midge. It is worth in market from $1,35 to 1,40 per bush. on the line of the Detroit and Milwaukee Railroad. Corn was much injured by the frost in August, and not more than half got in sound. Good corn is bringing $1. Potatoes not more than half a crop, worth 65a75c., and winter apples 50a62, c. per bushel. Hay was light, some meadows injured by the grub, and spring unfavorable to others, worth from six to ten dollars per ton in Shiawassee county.

Misery loves company—as Dr. Beebe, of Hillsdale has told his experience with his last crop of wheat, I will tell my own one year ago last season. I had a field of eighteen acres that I wished to sow to wheat in the fall, and I wanted to sow some millet also. My friends told me that I could sow a part of the field to millet and get a good crop, then it would produce just as good wheat as the part summer fallowed. I sowed five acres of millet, two of oats, and fallowed the remainder. I harvested the oats and millet, and plowed the stubble the middle of August, harrowed the first of September, and sowed all the field at the same time the 8th of September—the result was when it came up, the insects were much worse on the oats and millet stubble than on the fallow part of the field, and when harvested the fallowed ground yielded one-third more wheat.—I think I am quite broken in, when thinking of grand results of *my* practical experiment, brought about by confiding in others advice.

The white soul wheat gave a better yield in this locality than other varieties.

A. W. CALKINS.

Perry Centre, Dec. 1863.

[We have never received the note spoken of by our correspondent.]

AMERICAN TEA.

The Philadelphia *Press* gives the following account of a new Pennsylvania product, which if it possesses the qualities ascribed to it, will in ten years render the United States independent of China; and bring down the exhorbitant price of tea now prevailing:—

It has long been our relief that, thanks to the bounty of God and the skill of man, these United States can produce every necessary and almost every luxury of life, without having resource to other countries. Two articles in ordinary use—coffee and tea—have hitherto not been cultivated here, but the former, largely grown in Brazil, can certainly be grown, in the open air, in some parts of our vast empire, and as for the latter, even Pennsylvania lies within the particular belt which is best adapted for its production. That belt is pretty wide, for it extends from the equator to the forty-fifth degree of latitude. Ere many years, China will cease to have a monopoly of the tea trade. The cultivation of the plant has been successfully introduced into Java and Brazil, and still more largely, into Assam, an East India Province, lying between the Granges and Brahmapootra. The cultivation of the Tea tree, with the manufacture of its leaves into an article of domestic consumption, is now in progress in Pennsylvania, and the State Legislature has granted a charter of incorporation to the American Tea Company, which undertakes to develop this new productive resource of Pennsylvania. The Hon. J. Quiggle, late consul to Antwerp, is at the head of the body, and the gentleman who may be considered its working head is Dr. Spencer Bensall, who reported to the Patent Office, some years ago, in favor of cultivating and manufacturing tea in the United States, and acquired his practical knowledge on the subject as superintendent and chief manager on the lands in India of the Assam Tea Company.

The Tea plant is indigenous in Pennsylvania. By the use of machinery in preparing the leaves, a superior article can be produced here, and sold at the rate of from eleven to thirteen cents delivered in markets; or about one-third of its cost, when manual labor is employed in the East Ind-

ies. At present, the produce of tea per acre is about 400 pounds, which may be largely augumented. It grows wild in some (not all) of the mountainous districts of Pennsylvania, and is found there in great abundance. Set machinery against the Asiatic process of manipulation, and the cost of manufacture here becomes much lower than in China, Assam or Java. It may come to pass, in the time even of living men, that Europe will import her tea from the United States, and not from China.

The green tea raised near Philadelphia has the look, odor and flavor of Asiatic tea, with a slight herbacious taste, the consequence of its not having been kept long enough before brought to the test. This, alone, make it differ from ordinary Hyson of good quality.

PROFITABLE INVESTMENTS.

The farmers of Michigan who have funds to spare cannot do better than to invest them in this great loan. The following from the Philadelphia *North American* gives the *farmer* subscribers some excellent advice. It is well for all who are in funds heed the counsel:—"Though money has been temporarily scarce, capital continues abundant; and the recent tumble in the stock market has brought capitalists to a realizing sense of the unreliable character of many of the securities dealt in. It is greatly to the credit of the Government that its loans, of all the securities daily dealt in on the market, have maintained their integrity of price better than almost anything else. Its Five-Twenty year six per cent. loan, the interest on which is promptly paid in gold, has been subscribed to, all through the pressure in the money market, at an average of over two millions per day. And what is not the least gratifying fact in connection with the daily large subscriptions to this popular loan, scarcely any of it is returned to the market for sale. It is taken for investment, and is held with unfaltering confidence in its reliability. And why should it not be? It is seen that the Government now, after two years of the most gigantic war that the world has ever known, experiences no difficulty in commanding the necessary means to prosecute it, or in paying regularly the interest in gold as it falls due. If this can be done while the war is being waged, who can anticipate any difficulty in readily accomplishing it when the war shall be ended? What better investment then, for capital, than the "Five Twenty" Government loan? But if any doubt, let him refer to the statistics furnished by the census tables of the various nations of the world. The facts which they present will prove the most satisfactory mode of dispelling the numberless gloomy apprehensions which are being continualy conjured up by those who are disposed to exaggerate the extent of the calamity occasioned by our rebellion. A reference to the state of most of the most of the prosperous nations of the old world clearly disproves such a position, and shows that the highest conditions of national advancement have not been materially affected by the extended wars in which those nations have been immemorially engaged, and that a heavy national indebtedness has not proved an unmitigated evil.

"For instance, Great Britain, France and the Netherlands will undoubtedly be conceded to represent the highest prosperity that has been attained by any of the European nations. And yet no nations have been called upon to induce fiercer or more prolonged wars, domestic and foreign, than they. The effect has been, unquestionably, to incur an enormous national indebtedness; but neither their wars nor their indebtedness have had the effect to destroy their elasticity, nor to check the progress of their general prosperity. The result would have been different, probably, if these nations had been falling into decay, instead of being, as they really were, in a state of development; and in this respect their case resembles our own, with enormous advantages in our favor. These nations, while undergoing the trials of war, were oppressed by the evils of an immense exodus of their people, caused by the density of their population, the impossibility to provide occupation for them, the low price of labor, and the scarcity of territory. Compared with our own country, they possessed slight room for future development. They were settled in every part, and no vast territory lay invitingly open to encourage enterprise and settlement. Their great problem has ever been what to do with their surplus population, which, in its turn, has sought new fields for adventure and self support in countries like our own, where an illimitable territory waits to be developed, and where incalculable resources invite industry and energy. The encouragement to be derived from these facts and comparisons of circumstances is very great, and to the mind of any dispassionate reasoner is conclusive that the course of this great country is onward and upward, and that its credit will live unimpaired to the end."

High Price for Sheep.—Mr. D. C. Hillman of Washtenaw, Co., a few weeks since, sold 140 Spanish ewes for $1,000 which is a trifle over $7.14 per head. A short time since Mr. Lumsden Gilbert, of Ontario Co., N. York, sold a flock of last spring ewe lambs (Spanish) for $20.00 per head at that rate 140 of them would amount to the snug sum of $2,800. The buck, the lambs were raised from, sold at the same time for over $100—the precise sum not now recollected.

THE NONPAREIL BUTTER WORKER.

The cut accompanying this article represents a machine for working butter, invented by J. P. Corbin, of Whitney's Point, Broome county, N. Y., and is described as follows:—

"It consists of a tray, T, resting upon a table of suitable height, to which it is attached by a point J, so that one end may be raised to pour off the butter-milk. A latch L, in front keeps it in place when the worker is being used. The worker W, consists of a ladle mortised into a lever. This lever hangs from the arm A, by a hook, and may be readily be detached by bringing it forward, an lifting it from the eye in which the book rests, and only when in this position. The arm A, turns on a pivot between the two standards, S.—These standards may be removed if desired, by taking out the key which holds the tenon in the mortise on the sides of this tray. The working of the apparatus will be readily understood by examining the illustration. The operator presses successive portions of the butter under the ladle by the means of the lever, and when the butter is crowded back toward the end of the tray, it is readily brought forward to be pressed again by means of the handle and ladle, and it is thus repeatedly gone over until all the butter milk is extracted. The salt is easily worked into the butter in the same manner. The apparatus in fact enables a person to use lever power in the application of a common hand ladle, and thus greatly diminishes the amount of force required."

This machine has been used in some of the largest butter dairies in the State of New York, and has met with universal approval. Among others who have tried and recommended it, is the Hon. A. B. Dickinson, of Steuben county, N. Y., long known as extensively engaged in dairying. He states that he made two firkins of butter in the same day, one of which was worked by the hand-ladle in the ordinary way, and the other with this machine. After some time he tried the butter, and found that worked with the machine to be of the best quality.

It makes a great saving of labor, besides doing the work in much less time, and equally as well as it can be done by hand. A little attention is required in first using in not be done by hand. Practice, however, will soon enable the operator to see when the working has been carried to the proper point. The price of the machine is six dollars. Applications for the purchase of machines or for the purchase of rights, should be made of Mr. Corbin, as above.

SEND IN YOUR SUBSCRIPTIONS FOR 1864.

Michigan.

Michigan contains, in area, about thirty-six millions of acres, and the valuation of the real and personal property of its citizens was, in 1850, sixty millions of dollars; but in 1860 it has increased to two hundred and sixty millions, and our population at that time was seven hundred and fifty thousand. We have just received the report of the Commissioner of Agriculture for 1863, and in the following table present his report of the summer and fall crops of the State as far as they are fully reported:

	Total of bushels, pounds, or gallons.
Indian Corn, bushels	15,190,137
Wheat do	14,963,785
Rye do	494,197
Oats do	5,436,797
Barley do	407,885
Buckwheat do	600,652
Tobacco pounds	160,825
Sorghum gallons	533,018
Hay tons	1,135,362
Potatoes bushels	5,264,733
Sweet potatoes	36,285

The prices of the above products are so much greater now than those given by the Commissioner, that we omit his estimates of the values of the several articles, merely giving his total, which is thirty five millions of dollars, and the number of acres of land cultivated for these crops is 2,291,469.

CABBAGE.—The best method to preserve cabbage in the winter is to gather them early, say about the first of November, when they are perfectly free from moisture, and hang them up in a cool, dry cellar. The great secret lies in their being kept *dry* until needed for use. Another excellent way is to *chop* them fine, and pack in a stone crock, in good cider vinegar, adding salt and pepper to suit the taste, and as good sugar as you can afford. Now, if you put into this preparation a little bruised horse-radish root, it will keep sweet and good until the "rebellion is crushed," which you will be pretty sure to do if you know what is good.

For the Michigan Farmer.

Farmers' Associations.

The time has come when a system of association among the agriculturists of this country is demanded. Agriculture itself demands it, and every other lawful and moral interest, is calling loudly for aid from this direction. Agriculturists have lived under the weight of the praise and encomium of the learned, the wise, and the great long enough, it is now time they assumed a position to demand respect. Washington said "Agriculture is the most healthful, most useful, and most noble employment of man." Who has not repeated it? from the merchant's clerk to the millionaire, from the medical student to the most learned M. D., from the poor pettifogger to the renowned advocate, and from the village politician to the greatest statesman. It is the universal burden of their conversation when directed to this calling, but the farmer, the poor victim of all these compliments, alone is silent. He has too much modest worth, says my friend the attorney, to force himself into public notice. Oh yes, adds the gouty merchant, his lasting attainments, and solid comforts, are already more than he can enjoy, and his good sense to strong to be affected by anything we might say. And why should he be thus affected? Chimes in the sonorous voice of the learned judge, does not his occupation orm the basis of all other occupations, and is it not that on which all of our institutions rest?—And with a pleasant nod he bows the subject into the hands of the Hon. Mr. Tixdolorough, the gentleman who delights in calling us his constituency, and then I shall let it rest, for after our interests have passed through the foregoing hands, there is not enough left to remark about.

Why can we not take the place that has been so long, and so universally assigned to us? Is it in want of ability, or want of moral courage, that is riveting us to the old land marks of society?—Who can look at the list of farmer's sons, who have become eminent men, and say we are wanting in the farmers? And who can witness the degeneracy of a city youth, without charging us with inexcusable want of the latter? Every circumstance seems to combine in favor of our assuming a proper position among the many business of life. There are but comparatively few interests against us; and those few at variance with, and antagonistic to religious, moral, and political economy. We have been "mud sills" long enough; it is now time we formed some part of the superstructure. The old fabric is tottering, and like to fall in; let us put in a "back bone."

The idea of combination among farmers is not new. Union stores, and other similar arrangements for our protection have been inaugurated, and fell through with long ago. Agricultural, horticultural, floricultural, pomological, sorghum, wool growers, and stock breeders societies have been formed, and successfully conducted; but the idea of a thorough system of association among those engaged in rural pursuits, seems to have escaped attention, or if noticed, seems not to have warranted a trial. I cannot, of course, speak for other States, but Michigan is just in the right position to succeed with such a movement. Our State Agricultural Society is in a prosperous condition, as are also many of the county societies. It is true the principal business of these societies heretofore, has been to hold annual shows, or fairs; but there is nothing in the law under which they have been created to prevent their being used for other purposes also. We have a law under which similar township associations may be formed and with these, aided by the various associations already formed, representing our interest, can we not bring about a system of general association in this State? If we only make an intelligent and energetic effort, success must follow.—The road is already opened for us, then "let's jump into the wagon and we'll all take a ride." If additional legislation is necessary to carry out the scheme, we will have it; legislative assemblies have always shown a disposition to grant us favors; indeed legislators have vied with one another in concocting plans, and divising laws for our benefit, they have sought after us, talked to us, and cross-questioned us to find out our wants; but we have never been in a condition to tell them they could not be ascertained, we have never known our wants ourselves. The best information they could get would be, Mr. A, is in the wool interest, and wants sheep protected from dogs, and the price of wool raised. Mr. B, raises corn, wheat &c., and wishes the prices of transportation regulated. Mr. D, is in the dairy business and would like to get a good price for his butter and cheese, but whether these several interests extend beyond two or three individuals or not, is not known. What could a legislator do with such a batch of information? He might sleep over it, but it would be a disagreeable subject, even for dreams.

Now we will suppose that the several township associations, in a given county, had discussed the special interests of their separate townships, and embodied their sentiments in resolutions, and the county association which composed of a number from each township association discusses the same subjects upon the strength of these resolutions, and finally the State association, deliberate upon the same questions, upon the strength of resolutions sent up from the counties. Would not their conclusions be like to embody the sen-

timents of agriculturists of the State at large? And would not their wishes when properly presented be likely to command attention from any, and every quarter? This is but a single instance of the benefit, thorough association would bring us. That this influence would be beneficial to all branches of legitimate business who can doubt? Will not the intelligent ruralists of the State take hold of the matter. The officers of the State and county agricultural societies have the position and the influence to accomplish the object if they wish to. We await their pleasure.—Brother farmers, watch and pray. E. W.

Ida, Nov. 1863.

Grazing Mowing-Grounds.

The grazing of grounds devoted to hay, is a subject frequently discussed. Some persons contend that a hoof should never be allowed to enter a mowing-field, except to carry off the hay or bring on manure. A few go so far as to say it is not advisable to take from land more than one crop of hay in a year under any circumstances—that all the aftergrowth should be left for the soil. Those who hold this idea generally let grass stand till it is ripe, and the aftergrowth in such cases will not usually amount to much. If grass is cut early, and the ground is rich, and the weather is moist, there will be a considerable second growth, and if this is cut early in September, there will be, in very favorable seasons, a third growth of considerable bulk.

Now every farmer must consider how he can dispose of this grass to the best advantage. If it be conceded that it would be of some benefit to the ground, the question then arises whether the grain on this score would be greater than would be derived from feeding the crop either as grass or hay. The objection urged against feeding it off is that the ground is thus injured, and succeeding crops diminished. Admitting that it is so, what is the farmer to do? His stock must be kept somewhere, and unless it is stabled or *soiled*, it must graze *some* land, and is not this land as much injured as any other would be? We have seen pastures gnawed so closely that a grass-hopper could scarcely find a blade of grass, when the owner had plenty of aftermath which he would not allow his stock to touch, because he believed that it would hurt the land. Which would produce the greatest amount of damage grazing the pastures till not a vestige of greenness was left, or by transferring the stock to the mowing-grounds and grazing them to a moderate extent, give the herbage of the pasture a chance to start?

But the benefit to the ground from allowing the grass to remain on it, is frequently overrated, and so is the damage by feeding it off. Injury may be done, undoubtedly, by grazing sward too closely, whether pasture or mowing. But the question is as to the quantity of grass which is beneficial to the land. Would it be better to leave what would make a ton of hay to the acre, or half a ton, or a less quantity?

In making a second examination of the farm of Clark Rice, of Brattleboro, Vermont, a few days since, two pieces of land were pointed out, the treatment and results from which throw some light on this subject. The two pieces are separated only by a fence. They are of similar character, and constitute a part of the western slope of a hill. Both have been irrigated for several years, according to Mr. Rice's system, which was described in this paper a year ago. One of these lots has been grazed every year, and the other has had no stock on it, as animals could not be turned there without doing injury to trees and crops growing on a portion of the lot. Sometimes the grass on the latter lot has been cut twice; but except when the second crop has been heavy it has been left on the ground uncut. Sometimes, when the season was very favorable, a considerable growth would be made after two crops of hay had been taken off, but this third growth was always left uncut. At the present time there is on it a second growth equal to fifteen hundred or a ton to the acre, which, owing partly to the scarcity of help, and partly to the great quantity of hay which Mr. Rice has secured, has been left uncut. The lot which has been grazed every year, Mr. Rice states, has produced fully as heavy crops of hay as the other, and of better quality, being finer, and of somewhat better species of grass. It has not been grazed very closely, but cropped even with the stubble left by the scythe or mowing machine. The treatment of the lots has been precisely the same except in the particulars stated.—*Boston Cultivator.*

Manure Sheds and Muck.

The Country Gentleman, in reply to an inquiry, gives the following:

The cheapest manure-sheds may be made by procuring first a suitable number of long posts, of locust or some other durable wood. As twelve feet boards are of the most convenient length for making the shed, set a row of tall posts firmly in the ground for the centre or peak of shed, and nearly or about twelve feet apart. The posts should extend upward twelve or fourteen feet from the ground. Then place a row on each side of the eaves, nearly or about ten feet from the central row, and the same distance asunder as the others. All that is now necessary is to put on the roof. Form the ridge or peak by nailing

boards on each side of the tall posts at the top, forming straight, continuous horizontal strips.—Strong boards, a foot wide, should be selected for this purpose, as they may sometimes have to sustain a heavy weight of snow. Form the plates by nailing similar boards to the tops of the lower posts. The roof is completed by placing boards from the peak to the plates in the usual manner. If necessary to exclude winds, one or two sides may be boarded up on the post. Any desired length may be given to the shed according to circumstances. Any farmer can build this shed himself; a more finished structure may be made by a carpenter. Muck should be as dry as possible when used, when it will absorb several times its weight of liquid manure. If wet, it will absorb little or none, and its value as an absorbent be thus lost.

Winter Care of Stock.

As the time is close at hand when our stock will come to the barn, and as its management at that time, and after, through the winter, is a subject of great moment, we venture other suggestions, which, if heeded, will be of benefit not only to the stock, but to its owners.

No man can afford to let his cattle shrink during the winter—though nine out of ten manage precisely in a way best calculated to bring about that very result. The mere keeping the breath of life in them, by dealing out poor or scanty rations, is one of the most miserable pieces of economy a herdsman can practice. The man who tries to see how little fodder he can keep his cattle on, is "saving at the spiggot and wasting at the bunghole." Though in the spring he might console himself with the reflection that it had cost him but little, comparatively, to get his cattle through, yet their emaciated forms and skeleton appearance could not add much to his peace of mind, nor their depreciation in actual value to the contents of his pocket, either present or prospective. To be sure, such management must be adopted as will insure the consumption of the coarser kinds of fodder early in the season, but in our zeal to get rid of this we commit a fatal error.

The change from grass to hay is great upon the system—especially if put immediately and wholly upon *poor* hay. And if we wish to keep our animals in a growing and thriving condition, there should be no check at this period. Let it be understood that every pound shrink is so much *lost*. The saying that "there can be no loss without some small gain," does not hold good in this case. It is lost outright to everybody and everything, and may be put down among those misfortunes as *actual* losses." If we view this matter aright, it is not improbable that the losses within this State from the mismanagement of stock, is scarcely less than its taxes.

What we wish to especially impress in this connection upon the reader is the importance of a *variety* in our cattles' feed. That is to say, we oppose their being put upon one kind of fodder, exclusively—especially upon poor fodder. Let the hay and the straw and the corn fodder be alternated, and each will be consumed with a better relish. Above all, let every animal under our care have at least one foddering of as good hay as the barn affords, and by putting in practice the following rules, there need be no falling away in flesh or thrift. Where extra feeds of provender or vegetables are given, a little discretion will dictate how and when:

1st—Feed regularly and with sufficient quantity.

2nd—The daily allowance should be made up of as large a variety as the barn affords.

3d—Easy and frequent access should be had to pure water.

4th—Every possible means should be adopted to administer to their comfort, in protecting our animals from the inclemencies of the weather and climate—which shall include a constant and liberal supply of bedding of some sort, if nothing but sand.—*N. H. Jour. of Agl.*

The Wheat Aphis.

Prof. Glover, Entomologist to the Agricultural Department of the National Government, gives the following description of this insect which was very destructive last year in Maryland, and which threatened so much damage in various portions of the West. It is also mentioned by Dr. Fitch, in his report for 1860, as having been found all over the New England States, in New York, Canada, and Pennsylvania.

"*The Aphis Avenæ*, (Fab.) Grain aphis or plant louse.

Eggs probably deposited by the unwinged females in the autumn upon late sown wheat, &c., where they remain all winter, and hatch the following spring.

Insects live solitary at first upon the leaves and stems of oats, wheat, rye, &c., before the flowers or heads are formed; where, by means of their suckers, they drain the sap from the plant. At this time only females are found, which are of green color, and bring forth their young alive. When, however, the flowers and heads are formed they discontinue their solitary habits and cluster in great numbers at the base of the chaff which envelopes the grain, and, inserting their pincers into the plant, extract the juices which should form the grain, causing the kernels to become more or less shrunken and light of weight. When feeding upon the juices of the young grain the plant lice change their color from green to a yellow orange and orange brown. These clusters or communities of plant lice at the base of each grain consist of winged females and their young, which last shed their skins several times before attaining their full size.

During the summer, female aphides give birth to living young, without pairing with the males. These young, when perfectly developed, produced young, likewise, without pairing, and so on for several generations.

The males appear later in the season, when they pair; the impregnated females flying to the late sown wheat, &c., to deposit their eggs which remain uninjured all winter and hatch the following spring.

FARMING to make money, is a different thing from farming for comfort.

FARM IMPLEMENTS AND MACHINERY.

We make the following extract from a valuable article under the above head, by J. J. Thomas, in the Report of the Department of Agriculture:—

The two great requisites for successful cultivation are a fertile soil, and the means for its working and pulverization. The first is attained by natural excellence combined with manuring, rotation, and ploughing in green crops. The second is accomplished by farm implements and machinery. Without the latter, no soil, however excellent, can be cultivated. They are as indispensable as the breathing apparatus to the life of an animal, or as vessels to the navigation of the seas. In nothing is the advancement of modern agriculture more conspicuous than in the rapid improvement of the tools and machinery of the farm.

Compare, for example, the old wooden mouldboard plough, extensively used not 50 years ago, with the best modern 'centre-draught,' or steel mould-board, easy running, smooth cutting, and inverting the sod almost with mathematical precision; or the old fashioned mode of pounding out grain with the flail, with the best improved threshers and separators. Observe the difference in expense between laboriously collecting the hay of a ten acre meadow by means of hand-rakes and sweeping it up with horse power, with revolving or steel tooth rakes, or the slow and fatiguing labor of dropping the minute seeds of root crops, when compared with the rapid and accurate distribution by the best seed drills. No laborer who has gone through the slow toil of swinging the hand-scythe and cradle day after day, will need any argument to prove to him the value of horse labor as applied to the best mowing and reaping machines, which shear off ten or twenty acre crops in a day, and during the present scarcity of labor, occasioned by the war, extensive farmers must have utterly failed to go through with their many operations but for the assistance rendered by modern implements for cultivating, drill planting, harvesting and threshing.

The amount of capital at present invested in farm implements throughout the United States is probably not less than five hundred million dollars! How important that this money be *well* invested! The best implements will execute work not only better and more perfectly, but at a vast saving in expense over those of bad construction. Take one of the simplest tools as an example: the common hand hoe, one made of best steel and of light neat construction, will enable a laborer to one-fourth work heavy, clumsy one, or will save one day in four, twenty five days in every hundred of work—an amount in a single season, more than fifty times as great as the difference in cost. The best steel plough may cost five dollars more than a poor cast iron one; but the force required to draw it if one-fourth less, would save the labor of a span of horses of one day n every four, and perhaps fifty or a hundred dollars yearly. What would be thought of the man who, to avoid the expense of buying a good plough, preferred to spade up his fields by hand, or to carry his grain to market on his back, to obviate the cost of a farm waggon? He would commit the same kind of error, although perhaps more glaringly, as the farmer who neglects to avail himself of the information on the machinery of the farm and the principles of its construction and use. Much loss has been occasioned by a want of knowledge of the principles which govern the working of all implements and machines, and many suffer themselves to be imposed on and deceived, when a simple and ready application of such principles would at once detect errors without resorting to expensive trial. The day is past for the commission of such blunders as the man who thought he was favoring the weaker horse in his team by giving it the small or short end of the whiffletree, or of the other man who balanced the bushel of grain, when carried to the mill on his horse's back, by placing the grain in one end of the bag and a large stone in the other. But still no one can visit any large agricultural fair without witnessing, among the large collection of farm implements, instances of glaring departure from fundamental mechanical principles. There are two great laws that should be thoroughly mastered by every farmer as well as every manufacturer—by the former, that he may the better select and make the purchases; and by the latter, that all his work may be as perfect in construction as possible. These are the laws of virtual velocities and the law of momentum.

1st. The former, familiar to many readers of this article, may be briefly explained to others before citing cases of its application. This law—simply expressed by "whatever is gained in power is lost in time" [or distance,] or by the formula that forces are always equal when the products of the power, multiplied by the distance, are equal—renders easily understood the principle of the working of every mechanical power or machine, from the simplest lever to the most complex combination of cranks and wheels. It explains equally well the capacity and power of the crowbar and or the steam engine. In the use of the crowbar, or any other lever, it explains equally well the capacity and power of the crowbar, or any other lever, it explains how the strength of a hundred rounds applied by the hand to one part will raise a thousand pounds weight resting on another part,—the hand of power being required in such a case to move ten times the distance of the weight. To lift the weight one inch the hand moves 10 inches. The two forces multiplied by their respective moving distances, namely 100 by 10 inches and 1000 by 1 inch, give equal products. This principle at once renders plain and intelligible the amount of efficiency in all the mechanical powers, as the lever, wheel, inclined plane, wedge or screw. Throwing friction aside, it gives the exact relative force of the moving power and of the operative power with mathematical precision. Explained by this law the famous "hydrostatic paradox" ceases to be paradoxical, but the inevitable result of unchangeable laws. The application of this law to machinery, for example, to a threshing machine, gives the force with which the teeth of the cylinder strike the straw, and consequently the amount of resistance which will stop it. If four horses drive such a machine, walking at the rate of three feet in a second, the cylinder, revolving at a velocity of ninety feet in a second, has a force thirty times less, or seven and a half times less than the force exerted by a single horse. This calculation shows the facility with which small obstructions, as, for example, an over feeding, will stop such machines. On the other hand, horses applied to slow working parts, as in a stump puller, where the stump is moved, perhaps, one hundred times slower than the working force, possess immense power. If, for instance, the horses travel thirty times faster than the movement by which the stump is raised, the force instead of being diminished, as in the last example, is increased thirty fold, or equal to the power of 120 horses, friction deducted. If each horse draws with a force of 300 pounds, the power would be equal to raising a weight of thirty-six thousand pounds in the same way the wonderful force of the hydrosta ic press—which is such that a man might, with one not larger than a water pail standing on a table before him, cut through a thick bar of solid iron with as much ease as he would chip pasteboard with a pair of shears—may be determined with equal accuracy. The operation of all mechanical contrivances may be explained and rendered simple by the application of the law of virtual velocities. It explains the steelyard, the platform balance, the toggle joint, the rolling mill, the cylindrical straw-cutter, the wedge power of the plough, the construction of the compound whiffletree, the power of the cider-press, the force of pulleys, the required strength of the mole-plough, &c.

In all these machines, the application of this law to every part is of the utmost importance in construction, that every part may be of just the required proportionate strength. Where great pressure occurs, these slow moving parts must be correspondingly strong. Where there is less pressure, and greater velocity exists, lightness and less strength is essential. Thus a scientific mechanic may be able to manufacture machines equally strong with those made by his ignorant competitor, with less waste of material and less probability of breaking in weak places, and to become beaten to pieces by the momentum of its needlessly heavy parts.

Even in the construction of so simple a thing as a farm-gate, a great deal of skill may be shown by making the slow moving parts which are near the hinges, strong and comparatively massive, while the latch end should be rendered as light as practicable. We sometimes see gates made needlessly

heavy at the latch end, drawing the hinges, and settling or becoming beaten to pieces against the post; while others, better made, equally strong, and half the weight, keep their position, move easily, work satisfactorily, and remain strong and uninjured. A farm waggon, which has to be drawn thousands of miles yearly, should, in order to be as light as possible, have the strength of each part accurately adjusted to its intended use; and although no one expects to see so perfect a vehicle as Dr. Holmes's famous one horse shay, "it is well to carry out the leading principle as nearly as may be practicable.

2d. The powerful effects of momentum deserve a few passing remarks, as affecting the operation of implements and machines. Its great effective force is exhibited by such simple operations as driving nails with a hammer, or wedges with a maul or beetle. The mere weight of the hammer, with the strength of the arm added, would produce no effect; the momentum does the work in a moment. The momentum of a rifle-ball in motion, small as it is, carries it through solid plank On a large scale the power of the pile-engine depends on this principle. The water-ram owes its acting to the momentum of the water in the driving-pipe. The fly-wheel in the same way equalizes the irregular or interrupted resistance, or jerking of various machines, such as straw-cutters, horse-pumps, and churns. These are the beneficial results of momentum. Sometimes it produces disaster, as when a heavy loaded waggon strikes a stone, the sudden effect of which is lessened on waggon, harness, and horses by the use of springs under the load. It was ascertained, by experiments made many years ago, that the machinery of a railway locomotive, when supported by springs would endure the wear and tear of use four times as long as without them.

How to Improve Wet Land.

A correspondent in the Colonial Farmer, says, the question of draining land has recently been discussed in your journal I shall not make any remarks on what has been written, but shall endeavor to explain a system that has worked well. I have had some experience in the draining and believe it to be the most efficient and cheapest where two inch pipe tile can be bought $6 to $8 per 1000. Stones being more plentiful in this Province than tiles, my remarks will be confined to the use of them. The first thing to be done is to find the lowest outlet for the water, then cut the main drain across the lower end of the field to be drained; from this drain cut drains nd into the more elevated land at intervals of 27 to 30 feet. The drains should not be less than three feet deep, (four is better even if farther apart) 10 inches wide at the bottom, and as narrow at the top as a man can make them, say 14 or 15 inches.—Make the bottom of the drain as smooth as possible, place a row of stones, about the size of a man's fist, on each side of the drain; then put a little larger on the centre, resting them upon those on each side and there will be a channel one or two inches wide left for the water to flow through. Care must be taken to put on the first three or four inches of stones, then with a shovel throw on five or six inches of such stones as may be picked up off the farm, avoiding any large ones. In digging the drain, put the sod on one side and the soil on the other. Before filling the drain, have stones necessary for the first three or four inches laid on the same side as the top sod; after the stones are all in, throw in the top sod and the best soil. The soil that remains after filling the drain may be scaled upon the land. At the end of the main drain, where the water has its exit, place two or three large stones and keep the mouth of the drains free from grass and weeds. If the field be then plowed out of sod into ridges nine to ten and a half feet broad at right angles to the drains, there will no longer be an excess of water. Such a system of thorough draining may be too expensive for this country; it would probably cost $24 to $30 per acre. But if so put in the main drain and carry out the system at convenient seasons. If the land is not very hard, a man with a good spade and pick should dig out, and *after the stones are put in, throw in the soil* for 15 to 20 cent. per rod, according to the nature of the ground.

Air and food are the preventors of disease, if given plenti- to stock.

Fixed Facts in Agriculture.

The following useful items are going the rounds, they should be preserved as a reference by every farmer and are worthy of his fullest attention;

1. That all lan is on which clover or the grasses are grown must either have lime in them naturally, or that mineral must be artificially supplied. It matters but little whether it be supplied in the form of stone lime, oyster lime, or marl.

2. All permanent improvements of land must look to lime as its basis.

3. Lands which have been long in culture will be benefitted by application of phosphate of lime, and it is unimportant as to whether the deficiency be supplied in the form of bone dust guano, native phosphate of lime, composts of fish, ashes, or that of oyster shell lime, or marl, if the land needs liming also.

4. No lan is can be preserved in a high state of fertility, unless clover and the grasses are cultivated in the course of rotation.

5. Mould is indispensable to every soil, and a healthy supply can alone be preserved through the cultivation of clover and the grasses, the turning in of green crops, or by the application of composts rich in the elements of mould.

6. All highly concentrated animal manures are increased in value, and their benefits prolonged, by admixture with plaster salt, or pulverized charcoal.

7. Deep plowing greatly improves the productive powers of every variety of soil that is not wet.

8. Subsoiling sound land, that is land that is not wet, is eminently conducive to increased production.

9. All wet land should be drained.

10. All grain crops should be harvested before thoroughly ripe.

11. Clover, as well as the grasses, intended for hay, should be mowed while in bloom.

12. Sandy lands can be most effectually improved by clay.—When such lands require liming or marling, the lime or marl is most beneficially applied when made into compost with clay. In slaking lime, salt lime is better than water.

13. The chopping or grinding of grain to be fed to stock operates as a saving of at least 25 per cent.

14. Draining of wet lands and marshes adds to their value, by making them produce more and better crops; by producing them earlier, and by improving the health of the neighborhood.

15. To manure or lime wet lands is to throw manure, lime, and labor away.

16. Shallow plowing operates to impoverish the soil, while it decreases production.

17. By stabling and shedding stock through the winter a saving of one fourth the food may be effected; that is one-fourth less food will answer than when such stock may be exposed to the inclemencies of the weather.

18. A bushel of plaster yer acre, sown broadcast over clover, will add 100 per cent. to its produce.

19. Periodical applications of ashes tend to keep up the integrity of soils, by supplying most, if not all the organic substances.

20. Thorough preparation of land is absolutely necessary to the successful and luxuriant growth of crops.

21. Abundant crops cannot be grown for a succession of years unless care be taken to provide an equivalent for the substances carried off the land in the products grown thereon.

22. To preserve meadows in their productiveness it is necessary to harrow them every second autumn, apply top-dressing and roll them up.

23. All stiff clays are benefitted by fall and winter plowing, but should never be plowed while they are wet. If at such plowings the furrow be materially ripened, lime, marl, or ashes should be applied.

24. Young stock should be moderately fed with grain in the winter, and receive generous supplies of long provender, it being essential to keep them in a fair condition in order that the formation of muscles, bones, &c., may be encouraged and continuously carried on.

25. Milch cows in winter, should be kept in dry, moderately warm but well ventilated quarters, fed and watered thre-

times a day, salted twice or thrice a week, have clean beds, be carried, and in addition to their long provender, should receive succulent food morning and evening.

26. Full complements of tools and implements of husbandry are intimately connected with the success of the husbandman.

27. Capital is not only necessary to agricultural success, but can be as properly used in farming as in any other occupation.

28. Punctuality in engagements is as necessary to the agriculturist as it is to the merchant.

29. Every husbandman should carefully read and digest matters connected with his business; his success being as dependent upon a full knowledge of its principles and details as is that of a lawyer or physician with a knowledge of the science of the law or physic.

30. Wheat, rye, oats, and barley should never follow each other in a course of rotation; there should always be an intervening hoed crop between them.

31. Weeds should never be permitted to mature their seed upon a farm, but should be pulled up or cut down as often as they show themselves, such being the only effectual mode of eradicating them. To insure this result, the ground should be planted in corn, and that kept clean.

32. Time and labor connected to the gathering of materials to be converted into manure, are the most fruitful sources of profit in the whole range of farm economy.

The orchard, to be productive of good, fair fruit, requires to be fed, as much as does a field of grain. The soil of each requires that the substances abstracted by the crop shall be restored. The soil shall be kept clean and open to the meliorating influences of the sun, the dews, the rain and the air; the bark of the trees should be kept in a healthy condition by scraping, when necessary, and by alkaline washes.

Seeding Land to Grass.

In a former article, we spoke of some of the leading points bearing upon this important subject, and will now briefly introduce a few more, with such authorities are at hand to sustain the opinions which we advance. We shall be glad if some of our intelligent correspondents will communicate their views, whether they agree with ours or not.

The transpiration of plants—that is, the parting with their moisture—is nearly confined to the day, very little taking place during the night, and it is much *promoted by heat*. Another effect of the grain plants, therefore, among the young grass would be to keep the whole field cooler and *more moist*, and consequently in the most favorable condition to live and grow. Under such circumstances, grass seed would seldom fail "to catch," as it is called, because it would be placed in a warm and moist position, and where the variations of temperature would scarcely affect it. The action of the plants, like that of the human system in health, would be regular,—not receiving nutritive influences largely at one period and losing weight at another, but steadily advancing in a healthful and vigorous growth. For "the quantity of moisture imbibed by plants depends very much upon what they *transpire*. The reason is obvious. When the vessels are once filled with sap, if none be carried off, no more can enter, and, of course, the quantity which enters must depend upon the quantity emitted." Checking rapid evaporation of the rains and dews, and preventing the plant itself from sudden changes of gain and loss of its moisture, keep it in a natural and healthy condition and secure success.

Another important fact goes to prove the beneficial influences of the grain crop upon the young grass. If the latter were sowed alone, the surface of the soil must be nearly bare for some days at least after the grass is up, and before it could grow sufficiently to cover the ground. If dry, hot weather should take place at this period, it would be likely to ruin the crop, because evaporation from both plants and soil would be very rapid.

It is well ascertained that the earth becomes heated much quicker and deeper under a bare surface, than under a sod, or where any vegetation is growing. From two or three experiments, carried in the coolest and warmest spots that could be found, it was evident that the relative difference in the temperature was uniform, and that on a hot summer's day, the earth, six inches under surface in sod, was *eight* degrees cooler than under a clean, loose surface. This fact has a direct bearing upon the question at issue, viz., *whether it is best to sow grain with grass seed, in laying down grass seed or not?*"

Few crops that we produce are more delicate and tender when young, than most of our grasses. They are small, quite succulent, and liable to be injured by various causes, so that any cheap and efficient mode of protecting them will prove of no small consideration to most farmers. The failures in seeding this crop make up an annual heavy aggregate of loss.

In a former paragraph we recommended the laying down of grass lands in August in the midst of standing corn. A clear writer, and a practical farmer, in an article upon "*Corn, as a Shade for Fruit Trees and Plants*," says: Last spring I planted about half an acre of strawberries. After the second hoeing, May 23, I planted corn between all the rows, using a variety called Early Six Weeks. I planted also one hundred Concord Grape Vines, between the rows of which I planted May 25, Canada or Eight Rowed Yellow Corn, * * The drought this year was of short duration, about four week, but unusually severe, owing to the intensely hot weather. My strawberries suffered to some extent, but comparatively little. Of my grapes, two or three were injured, but not more than one, I think, will be lost, while the year before I lost at least twenty per cent. not shaded by corn! On a little more than half of a newly planted patch of raspberries I planted King Philip corn between the rows. None of that portion of the raspberries was injured, but about half of the rest died. Dwarf apple trees, planted last spring on a gravelly soil with south western exposure, have done much better where they were shaded by small than where the ground was planted to potatoes. * * From my experience and observation, he adds, I am led to the conviction that for this climate the cultivation of corn among fruit trees, grape vines, raspberries, strawberries, &c., the first summer after they are set out, is a practice of very great value.

A few more points present themselves for consideration, which we will defer to another paper.—*New England Farmer.*

Butter Making and Packing.

Thinking it may be of interest to some of your readers, I will give a few ideas of butter making, obtained by making it for years, and while visiting some of the noted and scientific dairymen of New York, New Jersey and other Eastern States.

In the first place, after the milk is drawn from the cows, it should be strained into a large tub or vat, stirred up and exposed to the atmosphere, bringing it all to the same temperature and quality. After cooking a little pour it into pans to be skimmed, and into tin pails, if to be all churned, and set in a cool, airy, but not windy place, to lobber, which will take place with it all at the same time, and should not be within forty-eight hours.

In a dairy where the cows are numerous, there will be different qualities and temperatures of milk, and if strained direct from the cow and allowed to stand separately, sometimes part of the same milking will lobber and whey, while some will remain nearly sweet.

If skimmed take at least two-thirds of the top off, and mix it all together, and bring it to the temperature of 62 degrees in warm, and 64 degrees in cold weather, and churned with a motion sufficient to fetch the butter in about thirty minutes, but not in less than twenty or over forty if possible, stopping as soon as the butter comes, which then should be gathered gently, and taken out and washed in salt water, which protects the grain of the butter and will extract the milk quicker than fresh water. It should then be salted with fine Ash on sal', about an ounce to the pound of butter, and worked but very little at this time, for fear of making it oily, as butter will not bear as much working when fresh or first salted, as it will after standing a few hours and the salt partly dissolved; then it may be worked a little more by pressing and turning it carefully in the pickle that the salt has made which will extract the milk faster and by less working than if allowed to run off as it works out; then it should be drained and set in a cool place until the next

morning, when it should be worked until the brine comes out clear; it will then be fit to pack, which should be in white-oak firkins, and when filled, there should be a wet cloth put on and covered with about an inch of salt and kept wet; and when once packed, it should not be disturbed, until needed for use, as it injures butter very much to work or mix it after it has stood even a few days, and at all times it should be handled as little as possible, avoiding all sliding of the butter or rubbing, as that will break the globules and make it salvy.

Butter properly made packed under pickle can be and has been kept for years, but the milk must be all got out, for that will make it stale and rancid without regard to salt or pickle, and the greatest caution should be taken not to wash and work it too much.

To facilitate and lighten the severe and fatiguing labor of working butter, we have got the best butter-worker yet in the world, working on the right principle, and this has been proved time and again by good butter-makers, and we were willing and ready to work butter with it at any time or in any place before the best dairymen or by the side of any other machine.

To make butter in cold weather, the milk should be scalded a little after being strained, which adds to the flavor, and makes it a better color; the milk should be kept in a room sufficiently warm to sour it within three days, and care taken that it don't get bitter. At times, in some milk rooms, there will be white flakes or particles of dry cream in the butter, and butter milk, which may and should be avoided and made into butter, which can be done by rubbing the cream through a wire sieve before churning, and will repay any one for the trouble. I have strained from one churning of butter-milk, and made three pounds of butter from the cream saved. It will pay in two ways; first, it will make more butter, and then it will be free of the dry cream, which will become sour and bitter.—*Ohio Farmer.*

Salt and Cold Water for Swine.—It is not a common practice, we think, to give salt to swine occasionally, while every farmer would consider it a prime duty to offer it to his neat stock, horses and sheep, as often as once a week. To be sure the swine get a little compared with the amount given to other animals. In proportion to their weight, why do they not need as much salt as the other stock on the farm?

We find the rounds of the papers upon the use of *salt for fattening swine.* The writer states that he "selected two p irs of barrow hogs w ighing 200 each. One pair received, with their daily allowance, two ounces of salt; the other, similarly fed, none. In the course of a week, it was easily seen that the salted pair had a much stronger appetite than the others, and after a fortnight, it was increased to two ounces apiece. After four months, the weight of the salted hogs was 850 pounds, while that of the unsalted, five weeks later, reached only 300 pounds. The experiment was repeated with almost precisely the same results."

If such should prove to be the general results, most farmers have not gained all the good advantages they might have done from the food fed out. From the example cited there is no indication that the salt excited a morbid appetite, and produced unnatural flesh and fat. Of course a sound judgment must be exercised in the use of salt, as well as of grain or any other food.

Another neglect of swine—and sometimes it must be a cruel one—is that of not giving them a plentiful supply of pure cold water. Why it is supposed that the hog should not need water as well as the cow and sheep—They do require it. When water is not given them, although fed with swill, they will drink heartily of the water collected in the yard or barn cellar, after visiting their trough several times, and finding it empty and dry. Nothing is more grateful to them in a hot day than a bucket of cold water, drank from a clean, sweet trough. We trust that farmers will give attention to the matter, and ascertain for themselves whether our suggestions are valuable or not.

Never allow weeds to bloom; is the worst proof of thoughtlessness. One day devoted this year will save a month's application next year.

Making Butter in Winter.

The Genesee *Farmer*, in an article on this subject, remarks that one of the chief difficulties in regard to making butter in winter is that there is little or no butter in the milk. "Butter, like fat," it is added, "is derived from the food. If the food contains fat or carbonaceous substances like starch and sugar, that will produce fat—and these are not all consumed to keep up the animal heat of the body, the cow if liberally supplied with it, will either increase in weight, or give milk rich in butter."

The editor of the *Farmer* gives the following mode of making butter, as practiced by an English dairy-woman of much experience. We have practiced with a success of a similar mode:—

"Where only a few cows are giving milk, skim the cream off every morning, and scald it by putting it in a tin immersed in boiling water, and letting it remain until well heated. If the cows are eating turnips, this will take away their unpleasant flavor from the butter. After scalding the cream, put it in a crock, and add to it the cream each morning (scalding as before) till you have enough to churn, say one week. If kept longer the cream is apt to become bitter. It is not desirable to skim the milk for more than two days. The cream should be kept in a moderately warm room, or at least where it will not freeze. When ready to churn, scald your churn and pour in the cream while the churn is hot and then churn immediately."

Oxen vs. Horses.

The members of the Greenfield Farmers' Club lately discussed the question What kind of team is the most economical for the farmer to use? The relative advantages of oxen and horses, according to the Greenfield Gazette, were set forth as follows:—

1st. It would not cost as much at the outset to purchase cattle as horses, nor as much to get yokes and carts as harnesses and wagons. 2d. Young, thrifty cattle would increase in value from $25 to $50 per yoke annually, while horses remain about the same value. 3d. Horses are more liable to meet with accidents, and many injuries that would render the horse worthless would prove but a slight damage to the ox or loss to the owner. 4th. There are many kinds of work in many places that can be performed to better advantage with cattle than horses. But all are not in favor of cattle. Several gentlemen present preferred a horse team because they could do more work in a given time, with about the same expense of feed. They also stated that one horse must be kept on every farm, and that it was cheaper to furnish one extra horse and make a team of the two than to keep one horse and a yoke of cattle. One man even suggested that mules would be preferable to any other animals for a team. Nearly all thought if two teams were necessary on a farm one must be of horses and the other of cattle.

Instincts of Spiders.—Spiders are greatly influenced by atmospheric changes, and on that account they have been termed "living barometers." If the weather is likely to become rainy, windy, or in other respects disagreeable, spiders fix the terminating filaments, on which the whole web is suspended, unusually short. If, on the other hand, terminating filaments are made uncommonly long, the weather will be serene, and continue so at least for ten or twelve days.

A Large Henery.—Messrs. Pearson & Hall have now on hand at the depot grounds about 3,000 hens, two hundred Turkeys and one hundred ducks. They expect double these numbers before Saturday, when they intend to ship them for New York. It is a novel sight to see such a large congregation of hens and well repays a visit to that locality.—*Hudson Herald.*

HORTICULTURE.

Which is the best Grape?

The following different opinions in regard to Grapes, shows how "doctors will disagree." We think them *both* good Grapes. The "Concord" will go off better in a market in consequence of its fine appearance and large size, while the "Delaware" will go off of a table, (our table at least) because of its exquisite flavor—for home use it is hardly excelled. Both Grapes in our opinion are among the hardiest known to Grape culture:—

THE CONCORD GRAPE.

George Husman of Herman, Mo., in the Horticulturist for August, claims the Concord as the *best Grape for every body.* He says:

"This is a bold position to take for any fruit, but I take it after trying it for seven successive years, and after comparing it with about sixty varieties I have in bearing, and also after due consideration of the pros and cons. Now let us see:

1. The vine is a strong healthy grower, and will succeed in any soil so as to give a fair crop under any treatment.

2. It is entirely free from disease, and entirely hardy.

3. It is, under proper treatment, a good bearer, and always ripens its fruit well.

4. It has a fine, large handsome bunch and berry, which sells readily in market.

5. It is a good wine grape, as it makes a wine equal (to my taste and a good many others,) to the best Catawba, if not superior, and we pretend to know here what good Catawba is, having grown it for sixteen years. It also makes more of it than any other grape I know of, to the acre, as it is nearly all juice."

THE DELAWARE GRAPE.

J. W. S., in the Country Gentleman, is just as decided in his opinion of the "Delaware." "If I were planting largely, I should give Delawares the preference over every other grape I have any knowledge of. The vine, in the manner of growth and hardiness, has much merit. I think it is never killed by exposure in the winter, and will not need any winter protection. It may be left on trellises, and, I think, may be relied on to bear good crops. The grape, besides having a delicate and high flavor, is very sugary, and will keep after being picked for a long time, as they adhere well to the stem. They may be dried, and in that state make pretty good raisins. Hal dried, they are delicious, and in that condition may be used as a dessert a long time after ripening, and perhaps, if carefully kept, from one harvest to another. In short, if it is as good as it appears to me, no fault in our country is so well worthy of extensive cultivation."

PRACTICAL HORTICULTURE.

A VISIT TO REV. J. KNOX'S EXTENSIVE GROUNDS.

The above named gentleman is one of the most thorough, practical, extensive and successful horticulturists in the United States, and has often been styled the "Strawberry King," from having raised in some years hundreds of acres of the choicest varieties of this profitable and delicious fruit. The *Triomph d' Gand* offered by us as premiums is from his stock, which is among the best in the country. An account of his grounds and system of cultivating various fruits must therefore, be interesting to our readers, as there is much to be learned from the opinions and experience of such an extensive and successful cultivator—one who is realizing a fortune from the results of his operations.

Sometime since, Mr. John A. Warder, (one of the most distinguished pomologists in the Union) of Cincinnati, paid a visit to the Rev. J. Knox's horticultural grounds and vineyard, and on his return home he made a verbal report of what he had seen to the Cincinnati Horticultural Society. The Society was highly pleased with the remarks of Mr. Warder, and requested him to make a lengthy and written report, which he did as follows:—

D. B. Pierson, President of the Cincinnati Horticultural Society:

In accordance with an order and custom of our Society, I proceed to render some account of what I have met with of interest while absent on a horticultural excursion.

Having recently enjoyed an opportunity of inspecting the plantations of Rev. J. Knox, in the vicinity of Pittsbugh, Penn., I proceed to give you some account of his admirable management and of his wonderful success. The experience of Mr. Knox has demonstrated that he has an excellent soil and situation for fruits, especially for grapes and strawberries, and also that he has known how to take advantage of his favorable surroundings so as to bring about the most admirable results.

The situation is upon the high rolling land south of the Monongahela river, above which it is elevated between 400 and 500 feet. The slopes incline variously, but those looking to the South and West are chiefly selected for grape growing. The soil is a clayey loam, with a liberal intermixture of sandstone, but also has lime enough to impregnate the percolating water. In some places the fossil sandstone constitutes a larger proportion of the soil. This is particularly the case on Troy Hill, Reserve township, north of Allegheny City, where there are numerous vineyards covering nearly one hundred acres, some of which

are very precipitious, hanging upon the southern and eastern declivity, supported by massive walls of sandstone, built at great expense.

In other places, the tenacious light colored clayey subsoil of this region, approaches the surface, and intermingling with the soil, makes a strong clay. In such situations, underdraining is very desirable.

PREPARATIONS.

The plow, followed by the subsoil lifter, has been found by Mr. Knox to be sufficient for comminuting this soil. With a strong pair of horses to plow, followed by two pair of oxen to the lifter, he is able to work about one-third of an acre per diem. This process is performed in the autumn. The ground is next cross-plowed with the same implements, going deeper, and a third plowing is done in the spring before planting, so that the soil is thoroughly prepared, being stirred to a depth of from 15 to 18 inches.

The vines are of summer's growth, from single eyes that are started in Mr. Knox's extensive propagating houses in the spring, and set out in well prepared soil about the first of June, for the summer's growth in the open air, which gives them very fine roots, and substantial stocky tops. From this soil they are carefully lifted with their abundant fibers, and are planted in the vineyard ground, with their roots carefully spread out in every direction. Sometimes a portion are planted in their stations from the propagating house, instead of spending a summer in the nursery, but such are not considered to be so good, though a season is gained by this plan.

The distance between the vines is six feet in rows that are eight feet apart; this is for trellis training upon the renewal system. A small stake is set by each plant, to which the shoots are tied. Instead of cutting the little vines back to two eyes, only the feeble wood at the ends is cut off, leaving several buds on the larger plants, and as these grow weaker they are rubbed out, and only the strongest allowed to remain. The reason for this is evident—it is to insure against accidental injury to the prominent buds in handling the plants. During the summer the shoots are tied to the stakes, and the next spring they are cut back to two eyes to force out two strong canes, which are tied up and trimmed of their laterals for three or four feet. In strong vines a third cane is allowed to grow the second year, the object of which will presently appear.

Training on the trellis commences on the third season of the vineyard, when the stakes are dispensed with. Posts are set in the rows that run north and south, about twelve feet apart; to these are nailed strips of board three or four inches wide, and seven feet apart it, these are the rails to which the upright strips, about an inch square and eight feet long are nailed. These are placed nine inches apart from centre to centre. The vines are trimmed this spring so as to form the two arms, each three feet long, from which the fruiting canes are to be produced. In a very strong vine, that had been allowed to produce three canes the previous summer, the third shoot is trimmed to three or four feet for fruiting, and tied upright to the trellis bar nearest the vine stock. while the arms are secured to the lower part of the trellis. As the buds on these last break, they are thinned out by rubbing off a portion, so that only the strongest are left, and these are so arranged that one of them can be trained to each of the upright trellis bars, each arm eight to each vine. This we should think a tremendous amount of wood for the third summer, but with the soil and treatment to which they are subjected, many of the variety of grapes require assiduous labor to confine them to the number of shoots which reach the top of the trellis, and most of the canes also bear a good deal of fruit. Mr. Knox feels confident that his Concord vines will average ten pounds of grapes the third season.—Some other varieties, such as the Taylor or Bullitt, and Herbemont, grow as vigourously, reaching the top of the trellis, and then stretching along horizontally for some distance; but some kinds do not cover the trellis the first year it is set up. These canes produced from the arms are divested of all their laterals during the summer.

THE RENEWAL SYSTEM

of trimming is adopted on these trellises, with some modifications, by adopting the spur pruning when necessary, as will be indicated below. In the fourth season from planting and always afterwards, every alternate cane is cut back to two eyes, while the other is shortened, according to to its strength and tied vertically to the trellis for fruiting; the spur produces a new cane, so that one spur supports fruit and the other produces wood. If it happens that the cane of last year is not strong enough for the fruiting, it is cut back, and that which bore the previous year has its fruit-bearing laterals, trimmed to spurs for fruiting, in its stead. In this way, by judicious management, the whole trellis is kept covered with fruit from year, to year and the amount produced is really astonishing, as an instance, I may cite twelve Hartford Prolific vines, which are four or five years old, that produced 620 pounds of fruit this year, from which $125 was realized—apply this to an acre, which supports about 1,000 vines as planted six feet by eight, and we may calculate the proportionate yield at fifty thousand pound of fruit, this at the low price of five cents a pound would produce $2,500 per acre! an incredible

yield, and one justifying a large annual outlay in assiduous care and labor.

THE STRAWBERRY BEDS.

After setting grapes in their stations in the vineyard, Mr. Knox plants the eight feet spaces with three rows of strawberries, eighteen inches apart, the plants being separated from ten to twelve inches; the whole surface is kept perfectly clean with the hoe during the summer, and the runners are trimmed off as they make their appearance. By this means the plants become very stocky and strong. At the approach of winter the beds are covered with clean straw, which protects the plants from freezing and thawing, as a winter mulch. The new leaves and flowers come through the straw in the spring, the fruit is protected from the dirt, and the whole crop is mulched by the decaying straw during the summer.—By this means the most wonderful crops of magnificent berries are produced—such, indeed, as must be seen to be realized. The method of shortening in by cutting off the runners, in combination with adaptation of the soil and high culture, makes even the stamen-bearing varieties abundantly productive in his hands. Such kinds as under ordinary treatment are considered shy bearers, producing only an average of ten perfect and well sized berries to an hundred blossoms, are here made to yield 75 per cent; but the stools are so strong, having so many points of inflorescence in each crown, that the aggregate of fruitage is much larger even than the per centage of fruit-producing flowers would make it appear to be.

Thus, in the numerous counts, very carefully made upon the ground last June, I reached the following results: One plant of the *Wonderful* produced 318 blossoms. A plant of the *Bonte St. Julien* had 84 blossoms, which yielded 67 fruits, or .80. *Kitley's Goliah* had 64 per cent. of fruit; Trollope's Victoria, 52 per cent.; and all of these varieties are considered strongly staminate, and; with the usual culture, they barely yield 10 per cent.

A very extensive investigation by counting in the case of the *Triomphe de Gand*, gave less than 42 per cent. of the blossoms yielding perfect fruit, and yet, so numerous were the flowers on these plants, that the number of resulting fruits was very great, being nearly fifty on several plants; whereas, with common field culture on our soils, this beautiful fruit had proved itself unworthy of culture from its unproductiveness, many plants having no fruit whatever, succeeding a plenteous blossoming.

The enterprising proprietor of these grounds is eminently a believer in progressive horticulture, and spares no expense in procuring new kinds that have promising characters. Among the hundreds of varieties that have been tested by him, he especially recommends the Triomphe, Golden Seeded, Hericart, Filmore, Victoria, Wilson. Of newer sorts the Russell, and a plant numbered Seven Hundred, possess admirable qualities, and prove the possible development of this fruit in a remarkable degree.

But to return to the grapes, the object of more immediate interest at this season of the year.—You will expect to hear something of their appearance and of the varieties in cultivation.

In the first place, the vines presented an aspect of perfect health and vigor; excepting a slight injury from hail, they seemed to have enjoyed complete immunity from all the ills that vines are heir to, no insect depredation, no mildew on the foliage or canes, no rot on the fruit, which was perfect, except in a few instances where they suffered from over-production, and that was only apparent in deficient coloring. Though the neighborhood had been visited by some severe frosts, the foliage was still beautifully green and abundant upon some of the trelisses, and ripening into rich tints of yellow upon others, with a slight frost scorching on the Isabellas, and only the foreign varieties, and some of the very earliest ripening sorts of the natives had cast their leaves and looked bare, on the 20th of October.

The show of fruit was the most magnificent I ever beheld—the quantities enormous, the appearance smooth and fair, the color rich, with perfect bloom; it would have been enough to excite the poetry of a man's nature, if it were not too deeply buried beneath the facts and figures of a severe investigation, such as that in hand at the time of this visit.

Mr. Knox has thrown himself into the culture of fruits most heartily, and with the greatest liberality he has purchased plants of every kind of small fruits that promised to be worthy of culture. Hundreds of strawberries have been tested upon the grounds, all the currants and gooseberries, the various raspberries of modern catalogues, the blackberries, and lastly, in order of ripening, the grapes, have been subjected to the test of fruitage. No expense is spared in procuring the varieties that are said to promise well, and many of them have already been made to yield their increase under his assiduous care.

I propose to transcribe a few of the remarks made upon my note paper while passing over the grounds, among the vines, but shall not describe all the varieties in cultivation. The first varieties planted were of the *Isabella* and *Catawba*, the kinds then generally cultivated. Both of these are bearing abundantly, the former heavily laden, but not at all the richer for its treatment here, being as in other places, flat and insipid in com-

parison with other sorts. The latter less deeply tinted than in more southern latitudes, but producing a magnificent crop of splendid bunches of beautifully perfect fruit.

The *Concord* was in full vigor, covering the trellis to the top with foliage and fruit—a perfect show. The bunches are not uniformly so large as we sometime see them, nor are the berries equal in size to the stereotype illustrations on nursery-men's catalogues, but the skin is thin, the pulp melting, the juice sweet and abundant, and though the flavor be somewhat musky, not to say boxy, or as some salesmen expresses it, of certain varieties, "with a characteristic native aroma," still it is the favorite with the people, and is selling freely at double the price of the Isabellas and Catawbas offered in the markets. Indeed for general planting at every man's door-stone, throughout the country, this hardy, vigorous and productive variety, apparently free from all the ills of grape-vines, has the highest claims so universal favor. Still, some of us may be allowed to have our preferences for a table grape. For wine, the Concord has begun to assert its claims, and a few samples have already been presented to the connoisseurs, who have pronounced it a promising red wine. A good deal of it has been made at Herman, Mo., this year and Mr. Hussman writes me that the must weighs from 85 to 90.

Next is the *Diana*, which is vigorous and productive, the bunch compact, the berry of beautiful color, tough skin, and rather firm pulp, juice sweet and having a peculiar flavor, which has been called "feline." The thickness of skin enables this grape to be kept a long time, so as to be on sale in the Christmas holidays—w en it commands a high price. The wine from this grape is very highly flavored with the aforesaid *feline*, and though peculiar, and at first perhaps repulsive, it strangely grows on one's affections; it will be valuable for mingling with the juice of some other grapes of less decided character; the *Delaware* itself has been suggested as one that might borrow piquancy from the *Diana*.

The *Delaware* has succeeded admirably in this vineyard, where it has been extensively grown, and with such success as to induce much further planting; Mr. Knox has several acres now in course of preparation for vineyard, and extended nursery rows of the vines produced this year, stand ready to be set in their future stations.—Whatever complaints may be made of this variety elsewhere, and some of us have had our troubles with the slender little things for which we have paid our money, this vine appears to find a congenial soil upon the coal measures of the Monongahela hills. Three years old plants have made a splendid growth of firm, close-jointed wood, and in many cases the vines have completely covered the trellis, and run along on the top—several shoots were seen of at least twelve feet in length, and in most cases there were more than the regular apportionment of eight canes to the vine, as well as an abundant crop of fruit. This grape has attained so much attention of late years, and is so familiar to the horticulturists of our country, that it is not worth while to describe its beautiful clusters of transparent, rosy berries—thickly spread along the vines. The wine is attracting great attention, and $5 per gallon has been refused for that made by Mr. Mottier, near our city, who has had perfect success in growing this grape here. The weight of the must with him in September was 102—Mr. Werk's, (probably the first run) weighed 108. The wine sells at $24 per box or dozen. The vines, once established, bear most abundantly, and the luscious fruit is only too sweet for most palates, as a table grape and to be eaten as honey rather than as food.—The fruit sells at Pittsburgh for fifty cts. a pound.

The *Union Village* is also quite a successful grape with Mr. Knox; on account of its great size and fair quality, it commands a high price, bringing 50 cents a pound. The Vine is vigorous and productive, but the fruit is too much like the Isabella to give much encouragement to wine-growers; it is essentially an amateur and market fruit. The excessive growth of the canes on this vine renders it somewhat tender, but I did not hear any complaints in this regard where the growth is diffused upon the trellis, as the canes are not then so rank.

The *Herbemont* showed all its vigor and greenness of foliage even at this late date, making a perfect screen of the trellis, and the numerous large clusters, thickly packed with the delicious, vineous, dark-colored berries, were almost concealed from view. This vine is somewhat tender, and the canes, like those of the Diana, are taken down and covered with earth in the winter, but the fruit is so spicy, and so free from pulp, that it is fully appreciated by the proprietor, who rates it among the best table grapes. Its qualities for wine are well known here. The must this year weighs 101.

The *Eleinboro*, an old variety but not generally cultivated, is a prime favorite with Mr. Knox, on account of its hardiness, productiveness, and the rich sweetness of its small, dark-blue berries, with red juice; the bunches are rather large, loose and shouldered. The grape is desirable for table and for wine.

The *Hartford Prolific* is an early variety, ripening its fruit for market early in September. The vine is hardy, vigorous, and very productive,

yielding more than fifty pounds at four years. The fruit is not first-rate, but very desirable for market. The berries do not drop, as reported heretofore.

The *Creveling* is winning favor wherever known. The vine is vigorous, hardy, and promises to be productive. The bark and leaf-stalks are very red; the foliage is smooth, the angles pointed, deeply lobed and healthy. The bunch is loose, the berries rather large, and blue, soft and melting, rather sweet—a fine market variety; ripening at Pittsburgh, August 24, it makes a fine market fruit.

The *Tokalon* is moderately vigorous, but does not appear to be very productive. The foliage is good, healthy, angular, pointed and pubescent. The bunches are not large, loose, and the berries are rather large, blue, soft and melting. They hold tenaciously to the branch, which makes this grape desirable for late use. It is sweet and not musky; quality from good to better—a table grape. Though well favored enough, it can scarcely be said to justify its cognomen, which means, emphatically, *The Beautiful*.

The *Blackstone* and the *Louisa* are evidently seedlings of the Isabella, which they resemble in so many particulars that their identity with the latter might well be suspected.

The *Opporto* is sufficiently vigorous and healthy, tolerably productive, but the bunches are not large; it may make a good red wine, but it is not desirable for table. The same remarks will apply to *Bogg's Island*, which has smaller bunches, and medium sized, dark blue berries, with a peculiar astringency; indeed it resembles our *Worthington* grape in its slender wood and thin, smooth foliage. The fruit of Bogg's Island also colors early, but it is not ripe until it has been frosted.

The *Alvey* is only moderately vigorous, rather slender, and does not appear to ripen its wood perfectly; the foliage is rather small and persistent; the bunches are small, loose and shouldered, with small round, blue berries that are soft and juicy with a brisk acid flavor, promising well for wine; it ripens from September 15th, to the middle of October.

The *Canby's August*, probably the royal Madeira, has vigorous, hardy, brown wood, with good, roundish leaves, somewhat pubescent. The bunches are small and loose, bearing round, blue berries of medium size, which are sub-acid and of indifferent quality. This is only a market fruit ripening the end of August.

The August Pioneer is a *very fox* grape, having vigorous, red, pubescent wood, with round and very pubescent leaves. The bunches are small and loose, with large blue berries, that are very pulpy, round and dry, sweet and foxy, indifferent and fit "*only for market*," ripening Aug. 20.

The *Mary Ann* is of similar quality, having vigorous brown canes, furnished with healthy, roundish, large and very pubescent leaves. The branches are rather small and loose, with large, very dark oblong berries, that are very firm and pulpy, as well as very musky, and of poor quality, ripening early in September. These grapes are unworthy of cultivation, and may be classed with the native *Amber*, *Northern Muscadine*, *Charter Oak*, *Wild Fox*, *et id omne genus*.

Since there is a great desire with the public, and especially with amateurs, for white or light colored grapes, they may now be gratified by cultivating several varieties of this character.

The *Taylor* or *Bullitt*, is one of the most promising of this class. The wood is very vigorous, but slender, and of a brown pale color, with some bloom, the joints are rather long, but the canes exceeded the height of the trellis. The foliage is good, angular, serrated and smooth. The bunches upon these thriftily growing vines, were small and compact, crowded with rather small, green, amber-colored, red, and dull red berries, which are melting and juicy, slightly pulpy, wild sub-acid to rich sweet; a very good table grape, ripening September 20.

The *Anna* is but moderately vigorous in its canes, but they are firm; the foliage is small, pubescent and disposed to curl and fall. The bunches are scarcely medium and rather close; the berries are from medium to large, round, of a whitish amber color, covered with a thick, white bloom; they are juicy, sweet, aromatic, but the skin is thick and the pulp firm. This is only an amateur variety, ripening the end of September.

The *Rebecca* and the *Cuyahoga* have higher claims for our praise, being more refined and delicate. Both of these are desirable amateur varieties, the former rather bearing the palm of excellence in the opinion of most judges.

These are some of the varieties that are now being subjected to the test of fruitage by Mr. Knox.

PROPAGATING HOUSES.

These are very extensive, and admirably arranged for the production of grape vines, of which enormous quantities are started annually, and set out in nursery rows to become vigorous, stocky and firm, quite different from the slender, drawn-up specimens that have been nursed in pots, under glass, all summer, and then exhibited at the fairs for the premiums of societies and the praises of the public, which latter is often made to suffer disappointment when planting such puny things as have been too often furnished to them. Hence a prejudice prevails against the plants that are propagated by artificial means, with bottom heat, which should not be referred to the means of pro-

pagation, but the fact that feeble wood has been used, perhaps, and still more to the improper treatment of the young plants, which have been crowded and drawn, and which have had their roots pot-bound, from want of space to expand and multiply their fibres, as they can only do in the well prepared open soil of the nursery. According to the best modern views of vegetable physiology, the single eye or bud should make as good a plant as the longer cutting. There is not ground for the prejudice existing among vine planters against these plants from single eyes, unless it be from the fact that some propagators fail to make vigorous plants from a want of knowledge as to the proper treatment of the vines during the summer. Too often they are made to grow as tall as possible, without regard to the stockiness and vigor of the plant.

In conclusion, allow me to reiterate the delight that was experienced in visiting these favored vineyards. The success of others should give us pleasure, even where the contrast with our own less productive vineyard is sadly against us. Let us not despond, however, but try again, and hope for better results in future years, with our renewed efforts to win success.

Respectfully submitted,

JOHN A. WARDER.

CINCINNATI, Oct. 30, 1863.

Cracking of the Apple and Pear.

The cracking of the apple and the blotches and scarifications frequently observed on its surface have been referred to the attack of fungoid growths or mildew. Various examples have been cited where orchards, sheltered from prevailing winds, have shown a decided exemption from these attacks. In opposition to this supposed cause of immunity it has been asked. Are our orchards more exposed now than they formerly were? As a general rule, we think it quite likely that they are, seeing that in all sections as cultivation increases the forests are gradually thinned and cleared. The effects of destroying the forests of country have already been noted; and we have a partial recognition of the importance of shelter in the precept of many intelligent orchardists who advocate the planting of fruit trees much closer than has formerly been the rule, and also in the practice of encouraging the trees to branch quite to the surface, instead of training to a clear stem five or six feet from the root. Both these expedients have a tendency to prevent rapid circulation of air through the orchard, and consequently are so far a preventive against evaporation from the soil as well as from the surface of the trees. Examples are not yet sufficiently numerous to warrant a decided opinion; but so far as they have been noted, the prospect of greater immunity by this mode of treatment is encouraging.

The cracking of the fruit has given rise to much speculation, and various theories have been advanced with reference to the cause. For a long period the opinion prevailed that it was owing to a deficiency of certain mineral ingredients in the soil, and various remedies based on this assumption were freely dispensed and tried, but with indifferent success. It is not now doubted that it is the result of mildew, and that the atmosphere, and not the soil, is at fault. In support of the opinion that it is governed by atmospheric influences, the fact may be quoted that the White-Doyenne, one of the finest pears when perfect rarely succeeds in exposed localities; yet, when grown in positions thoroughly protected, it is still produced in all its pristine beauty and excellence. Referring to cases with which we are familiar, we have seen annual exhibitions of this fruit grown in the built-up portions of the cities of Philadelphia and Baltimore, most perfect of its kind, without spot or blemish, when those from trees growing in the more exposed suburbs invariably proved defective. Again, it has been lately shown that, fruited in the quiet atmosphere of a fruit-house they attain great perfection; and further, we have seen a tree, one of a row that produced worthless fruit, enclosed on all sides by a small box, open at top and elevated a few inches above the soil, produce perfect fruit, while the productions of the adjoining trees were, as usual, cracked and worthless. Whatever may be allowed for protection in the above cases, it is very evident that they were not influenced by the nature of the soil.—*Rep. Dep. of Ag.*

The Slug-Caterpillar.

J. W. Manning, when the writer visited his nursery, late in summer, some account of which appeared in the Boston Cultivator some weeks ago, called attention to what he supposed to be a new species of caterpillar, discovered on his young apple trees in his nursery, lately an old pasture land. The writer brought some of them into the city and showed them to Dr. Durkee, a member of the Boston Society of Natural History, who at once decided them to be slug-caterpillars.

Among the many odd-shaped caterpillars, says Dr. Harris, not the least remarkable are those called *Limacodes*, slug-like on account of their seeming want of feet, their very slug-like motions, and the slug-like form of some of them.—The body is very short and thick, and more or less approaches an oval form; it is naked, or, in some kinds, covered only with short down; the head is small, and can be drawn in and concealed

under the first ring; the six fore-legs are small and retractile; and the others consist only of little fleshy elevations, without claws or hooks.—The under side of the body is smeared with a sticky fluid, designed, as it would seem, to render their footing more secure, and leaves behind it when moving, a slimy track. Their cocoons are very small, almost round, tough and parchment-like and are fastened to the twigs of plants on which they live. The moths of some, if not all of the *Limacodes* make their escape by pushing off one end of the cocoon, which separates like a little circular lid.

The Dr. adds, that the most common of these slug-caterpillars in Mass. lives on walnut-trees, coming to their full size in September and October, and individually is 5-8 of an inch in length, and more than 3-8 of an inch across the middle; the body is thick and diamond-shaped. It is called *Limacodes Scapha*. The *Limacodes cippus*, is found in Mass. from the middle of July till the 10th of August. It is of a reddish-brown color. It feeds on the leaves of dogwood, (*Cornus Florida*,) oak, and other trees. It cocoons in September and the moth comes out in July.

A still more extraordinary slug-caterpillar in Mass. having a very remote resemblance to the last, says Dr. Harris, is found on forest trees, and occasionally in considerable numbers on cherry trees, and apple trees, from July to September. It is of a dark brown color and is covered with a short, velvet-like down; its body is almost an oblong square, but the sides of the rings extend horizontally in the form of flattened teeth; three of these teeth on each side, that is, on the for part, the middle and the hind part of the body are much larger than the others, and are curved backwards at the end. When fully grown, the caterpillar measures nearly an inch in length. It does not bear confinement well, and often dies before completing its transformation. Dr. Melsheimer, to whom I am indebted for one of the moths, informs me that the caterpillar eats the leaves of the wild cherry, as those of the white oak and the red oak, and makes its cocoon about the middle of September, changes to a chrysalis the April following, the moth appearing about eight weeks afterwards. The name given it by Dr. Smith, of Georgia, is *pithecium*, signifying a shrivelled, monkey-faced woman, bestowed upon it probably, on account of the shrivelled appearance and dark color of the caterpillar. In its winged state *Limacodes pithecium* or the hog-moth, as it may be called, is of a dusky brown; its forewings are variegated with light yellowish brown, with a narrow curved and wavy band, of the same color, edged externally with dark brown near the outer margin, and a light brown spot near the middle; the fringes of all the wings are spotted with light brown; the legs are covered with long hair; the antennæ, in both sexes, are slender, almost thread-like, and not feathered. It expands from about an inch to an inch and a quarter.

If the one last described above is not identical with the species found by Mr. Manning's little boy, it is like it. It feeds on leaves and makes no web. It seems as yet far from being common or abundant. It is hoped that it will not prove a new and formidable foe to the orchardist and nurseryman. Dr. Durkee has just informed the writer that the three slug-caterpillars left with him, eat for about 10 days, and then cocooned.

We have noticed this insect upon our Pear and Cherry trees, during the past summer, and we think they are in other localities of Michigan.

LADIES' HORTICULTURAL ASSOCIATION.

REPORT ON SHADE TREES, BY MRS. D. A. NOBLE.

It has been proposed that something should be said, of planting our streets with trees, and suggestions as to the best varieties for that purpose were solicited. It is found quite a serious objections, (in some of the older cities,) where trees are too thickly planted, as is often the case, excluding for years, the sunlight from the houses, producing a damp, cool atmosphere in the rooms, justly deemed injurious to health. Also that trees when they so nearly approximate, are often infested with worms and insects which render them highly obnoxious. Two of our cities are now interested to know of any remedy for the Caterpiller on their trees, (except taking down the trees.) In New York, Brooklyn, Troy, Poughkeepsie and Saratoga, they have become troublesome indeed, spinning down on the ladies' bonnets and epauletting the gentlemen in the same manner, while to walk without crushing the tender creatures requires much skill and caution. The inch worm, (green,) a large hard brown worm, and the nimble long black wiry looking body, are the only ones which have come under my observation. Each and all are decidedly obnoxious and it is hoped that a spirit of migration westward may not inspire this part of creation.

The Maple Tree. (*Acer*,) is justly held in high estimation possessing many particular advantages of beauty and utility. It grows well, bears transplanting, is little infested by insects, produces an ample and delightful shade, assumes exquisite beauty of coloring in the Autumn, as it fades and dies off, and the Scarlet Maple [*Acer rumbrum*,] in early spring bursts out in gay tufts of red blossoms long before a leaf is seen on other deciduous trees. This may be considered the most beautiful variety—and as all the maples have

peculiar advantages for street planting—should hold a conspicuous place for that purpose. The bark of the scarlet maple is gray, with large whitish spots. Its trunk in the choicest parts furnishes the beautiful wood known as the *curled maple*. The finest trees are produced from seed.

THE SUGAR MAPLE, [*Acer Saccharinum*,] produces the well known sugar—its trunk the fine wood called birds-eye maple.

THE WHITE MAPLE, [*Acer Cricarpum*.] This species resembles the scarlet flowering maple—the flowers are pale in color, and much smaller than those of the above named varieties. [*Acer nigrum*,] the Black sugar maple of Genesee, [*Acer negundo*,] the Ash leaved maple, has handsome pinnated foliage of light green.

These varieties are most used for street planting and give us a beautiful variety in color and form, as in the autumn we first perceive a bright yellow stealing over the leaves, then a deeper golden tint, then a few faint blushes till the whole mass becomes one blaze of crimson and gold.

THE ELM, [*Ulnmus*,]—We may claim for the Elm, the epithet, "Elegant and Graceful." The flowers are of a purple or chocolate color, and appears before the leaves in Spring. It is one of the most common trees for public walks and avenues, in America, France, and Germany. It grows with great rapidity, and and soon forms a wide extended shade. The American white Elm, [*Ulmus Americana*,] is the the best known. It often reaches 80 feet in height. There are several varieties, and there is scarcely any soil to which the elms are not adapted. They bear transplanting remarkably well, suffering but little, as the elm scarcely produces a tap-root. Even large trees may be removed. The recently removed tree should be plentifully supplied with water. I saw a hedge of Elms, very pretty, made by planting small trees, size of lady's finger, and kept cut with shears.

THE WHITE ASH, [*Fraxinus Americana*,] is a beautiful and I believe clean tree for street planting. There are several varieties, as the Black Ash, Red Ash, Green Ash, which grows in Penn., the Blue Ash of Kentucky, Weeping Ash, &c. The Ash, unlike the elm, starts into vegetation late in the spring, and in winter the long grayish white branches are pleasing in tint, compared with those of other deciduous trees. Its highest beauty is the coloring which its leaves assume in Autumn.

THE MOUNTAIN ASH TREE, [*Pyrus*.]—25 feet is about the average height of the Mountain Ash. The foliage is delicate, the blossoms are white, and the berries a brilliant scarlet. For the sake of these berries, this tree is a great favorite with birds; therefore it would be an agreeable addition to our variety of street planted trees. In former times this tree was supposed to possess the property of driving away Evil Spirits. Its effect might be noticeable if frequently cultivated.

Vegetable Locomotion—A Phenomenon.

The San Francisco *Bulletin* gives an account of a skating seed of the "Miraculous Devil," one of the greatest curiosities, probably, that ever appeared in the natural world to puzzle philosophers, and make scientific investigators confess that there are certain dead walls against which they can only beat their heads in vain, and it is found in a simple seed brought from the Sierra Madre range in Mexico, and called by the natives of the country *El Diablo de Miraclos*. It is the seed, however, of a small tree, or shrub, known to Mexicans as the *Yerba de Flecha*, or Arro Tree. The name is probably derived from the fact that the Indians were accustomed to extract a juice from it in which they dipped the points of their arrows, thus barbing them with a swift death. So poisonous is the juice which exudes considered that the natives cannot be persuaded to touch leaf or limb at all; and it is stated that were it attempted to graft the *yerba de flecha* with any other tree, the slip would wither and blast it an hour. This may or may not be an exaggeration, though the probabilities are great that it is; but of the effects of the poison on the human system there can be no question, the facts being well substantiated. The wound that a pin's point would make, if covered with the vegetable venom, causes death to ensue in an hour, leaving the body swollen like that of one who had died of dropsy, and discolored. The seed looks not unlike a bean, is almost the same size, and has a similar dark-brownish color. Three of them grow in the pod, which is round as an orange—segregate this orange in three natural sections and you have the shape of our miraculous devil to a dot. If laid on the palm of the hand it is as sleepy and quiet for a minute or two as a poppy seed could be, but by and by a pulsation and throbbing makes itself felt, and anon it goes sliding and skating, backwards and forward, now to the right and again to the left, straight ahead, sometimes, in the natural course of human and animal progression, and at others taking the sideway slant which crabs adopt. It is an eccentric fellow, and has the same objection to lying on its back that a mud-turtle has, flopping over without the aid of fin or tail. What are its means of progression? How does it rub along?—there's the rub. It has neither sign nor shadow of leg nor paddle-wheel, nor even has it the wriggling

cuticle and vertebræ of the serpent kind. But still it manages to slide along, like a stiff-legged boy on skates, moves by occasional puffs of wind. It cannot be counted on with any certainty, sometimes having to be held in the hand for ten minutes before it will consent to exhibit. The period of activity is heralded by the throbbing of which we have spoken; it is the bell, so to speak, of this little natural engine, which says: Look out, the car is coming. If held to the ear during this period of activity, the throb can be heard as distinctly as the tick of a Geneva watch.

Altogether, it is a most mysterious seed, and revives all the weird superstitions and stories that of old were told of the subtle forces which lie hidden in the natural and physical world. The odic seems to find its fullest exponent here.

Growing Upland Cranberries.

It is the nature of the cranberry, like all other plants, to grow to perfection somewhere, and as it happens, this somewhere is where the land is so sterile that nothing else can grow except moss.—In proof of this we find both the bog and mountain, cranberries growing naturally on the mountain, in the lowest bogs, and in all locations, sometimes floating on the pond, always on poor soil, mixed with moss, which is a protection for it both from summer heat and winter cold.

Cole, in his Fruit Book, says: "Where a gravelly knoll has been reduced for a road, we saw excellent cranberries of spontaneous production, on dry, hard and poor soil. On another spot, we saw fine fruit by the roadside, on a very poor, dry, hard soil." He also adds, "with these cases of good crops under every disadvantage, it would be surprising if cranberries should not grow well on high land, under good culture." Now it *would* be surprising if cranberries would not grow well on high land; but as for the culture, I would ask for nothing more than to remove the soil to the depth of one or two feet with a plow and scraper, and plant the same with vines and moss from the cranberry bog. This should be done in the fall or spring, and the tops mowed off the following summer, which will cause them to spread and cover the whole surface. By this experiment I have raised, the present season, at the rate of 453 bushels per acre.—C. Pitcher, 2d, *in Maine Farmer.*

Some Apples.—We have received of that sturdy, veteran agriculturist and fruit grower, Fabius Miles, of Hartford township, a fine lot of Holland Pipins, which average about 14 ounces each. Several of them weigh over a pound each. We do dot know whether Fabius of Old, or even Cincinnatus ever cultivated apples. It is true however, that if these specimens descended from Roman stock, Roman apples, like Roman virtues, should be more extensively cultivated.—*St. Joseph Traveller.*

Dairy Farms should not be Overstocked.

Pastures should not be overstocked—the supply of food must be abundant, otherwise serious losses will be incurred.

There is nothing gained by stocking clean up to or a little beyond the full capacity of the land, and trusting to an extraordinary good growing season to bring the animals through. Much milk will require a proportionate amount of food, and we have yet to see the cow miserly kept on scanty fare who can turn *that fare* during the season into 600 or 700 pounds of cheese. The rule should be the largest quantity and best quality of dairy products per cow; and not the largest number of cows without thought or care as to the respective quantity or quality of milk from each.

Let this be illustrated a little more fully. The annual average quantity of cheese made by some of our dairymen has reached seven hundred pounds per cow; the average in the dairy of Mr. A. L. Fish, as has been given in the reports, was in 1845 seven hundred and seventy-five pounds per cow. At the latter figures, thirty cows would yield twenty-three thousand two hundred and fifty pounds of cheese, which, at seven cents, amounts to $1,627,50. Now compare this with a dairy of sixty cows, averaging four hundred pounds per cow, and we have twenty-four thousand pounds, which, at seven cents, amounts to $1,680 or only $52 50 to balance against the thirty additional cows. The average of Mr. Fish's dairy may be said to be an extreme point to reach, but the four hundred pounds per cow in the larger dairy is believed also to be more than the average amount realized by a very great proportion of dairymen.

What has been attained by one, can by good management be realized by others. Of one thing there cannot be much doubt; there is a faulty management somewhere, which demands correction, and it the duty of every dairyman to study all the causes likely to influence or control the quantity and quality of his dairy products, and ry to reach the highest standard of excellence in all that pertains to his business. Let not the land be overstocked; make provision for supplying food for a certain number of cows, and if the quantity of cheese in the aggregate is to be increased, let the poorer animals of the herd be selected out and sold, and their places filled by better stock, rather than adding to the herd dull and refuse cattle, and scrimping all in their food during a part or the whole of the season.—*N. Y. S. Ag. Society's Trans.*

THE MICHIGAN FARMER.

DETROIT, DECEMBER, 1863.

R. F. JOHNSTONE, - - - - Editor.
WILLIAM S. BOND, - - Assistant Editor.
Mrs. L. B. ADAMS, - - Editress.

REGULAR CONTRIBUTORS.

T. T. LYONS, - - - - - Plymouth.
WILLIAM R. SCHUYLER, - - - - - Marshall.
Rev. B. McCULLOUGH, - - - - - Walled Lake.
E. WILLALD, - - - - - - - - Ida.
CHARLES BOYNTON HOWELL, University of Michigan.

☞ *All Business Communications in regard to Subscriptions or Advertising should be addressed directly to BOND & SNYDER, Publishers of the Michigan Farmer, Detroit in order to ensure immediate attention.*

TO POSTMASTERS.

We often receive returned papers, with merely the *name* of the subscriber upon them, and not the *town*, in such cases it is difficult to find them, as we are obliged to go over 200 pages of names. Will they please to add the name of the Post Office.

"Postmasters are responsible for the subscription of a newspaper or magazine, as long as they allow it to be received at their office, after it is uncalled for, or refused by the person to whom it is directed. The Postmaster General requires that a written note shall be sent to every publisher, that his paper of works lie dead in that office."

THE MICHIGAN FARMER FOR 1864.

We hope that every friend of the FARMER will make an effort to increase list, and thus extend its field of usefulness for the next year. ONE subscriber adds to its prosperity, if no more can be obtained—every drop will help to fill the bucket. Farm operations have about closed up, and every one of our friends can spare a little time to obtain a few subscribers, and also to correspond the result of their season's work, as long evenings are upon us, and every man has time to secure a few subscribers or write his practical experience.

In asking the good offices our readers in favor of the FARMER, we think we do so conscious of the fact that this journal has done much to improve and uphold the interests of the farmers of Michigan during the past year, and is therefore entitled to their fullest support as a HOME journal, advocating the *best* course in regard to their marketable *home* productions.

The advice of the MICHIGAN FARMER on the prospects of the Wool market alone has saved growers in this State over a *quarter of a million of dollars!* As it will be seen by the following figures:

Wool in *August*, 1863, sold at 55a60c per lb.,—2,000,000 lbs. at this price would have amounted to $1,200,000.

Wool in *November*, 1863, sold at 70a75c. per lb. 2,000,000 lbs. at this advanced price, would amt. to $1,500,000.

At November prices,	- - - -	$1,500,000
" August	" - - - -	1,200,000
Balance in favor of Nov. prices,		$300,000

While most of the agricultural and commercial journals of the country were endeavoring to "pull wool over your eyes" by joining in the crusade of the speculator and manufacturer against the grower, or others maintained a persistent silence in regard to the future of the wool market, the FARMER, we are pleased to reiterate, laid before the growers in this State their inferences that Wool must bring a well-advanced and fair price before the end of the year, and advised them to hold on as high prices must be paid. Those who followed our predictions know richly they have reaped the benefits and profits of "holding on"—having obtained 10a15c. per lb. advance on August prices.

We claim at least 2,000,000 lbs. out of about 8,000,000 sheared was kept back by the decided stand taken by the FARMER upon the question of the ultimate advanced prices of Wool. We have received numerous letters from various parts of the State, averring such to be the fact in their respective localities, one of which we publish below, showing how men will often fight against those who give them the best advice:

ARGENTINE, Nov. 20, 1863.

Messrs. Bond & Snyder—I have got a subscriber for the FARMER, one of the American *Agriculturist* subscribers. There was an agent in the neighborhood who induced four or five to take that paper; I told him that I thought it would be more for his interest and the people in general to take the MICHIGAN FARMER, it was better adapted to the wants of the farmers of Michigan than an eastern paper could be, and much more reliable on markets than any I had seen. The agent thought it was his business, &c. I made up my mind that it was the premiums he was after.—Since June I have called regularly every month on the said agent to know the prospect, present and future of Wool, and found the *Agriculturist* as still as a mouse on the subject, except to simply give the N. Y. markets as brief as possible, and for all he could learn from *his* paper, he would have sold his wool at the commencement of the market for 55 or 60 cents, but having access to the MICHIGAN FARMER, was induced to wait for a better price (lacking faith in his own oracle) he sold about two weeks ago for 75 cents. Some of his his subscribers think that the *Agriculturist* was bribed heavily by eastern buyers, or was ignorant, or they would have kept their readers posted as to the future prospects and condition of the wool market, as the FARMER has so faithfully done. Take either horn of the dilemma, and we have no confidence in the agent's paper,

for if it had the interest farmers at heart they should have posted itself and informed its readers, and if it was bribed, the farmers had ought to abandon such a paper, and let the speculators support it. Yours truly,

ISAAC R. MIDDLESWORTH.

Another subscriber in St. Clair county, speaking of the reliability of the FARMER market advices, says:

"I had about 150 bushels of Barley for sale, and an agent came along our way and offered me $1.25 per hundred for it. I asked him if that was a fair price—he said it was about what he paid. I happened to just receive my paper from the post office, and thought I would look at it first, and found Barley selling at $2.40 per hundred in Detroit. I told him of it—he said it was a mistake, no such price could be got. He did not convince me, however, and I held until I visited Port Huron, when I found that the *Farmer* advice was the most reliable. He bought about 200 bushels of a neighbor who was not posted on home markets, at $1.12 per hundred; I got $2.40 for mine, thus gaining $1.18 on every hundred, or about $150.00 more than my neighbor on one crop (the price of the *Farmer* 160 years) through being a subscriber. I consider it for the interest of every farmer in Michigan to support a HOME agricultural journal which stands so firmly for their welfare as does the *Michigan Farmer*."

The above are a few of the many illustrations of its usefulness to the farmer in the cultivation and profitable disposition of his crops—and it is upon this ground that we think we can conscientiously ask the wholesouled support of every tiller of the soil. We have found many true friends who fully comprehend the importance of sustaining at least one agricultural journal in Michigan. Prominent among these are

Wm. R. Schuyler, Esq., of Marshall.
P. Parton, Esq., of Flint.
J. Clizbee, Esq., of Quincy.
Mrs. R. B. Hampton, of Albion.
Mr. J. Barren, of Linden.
Dr. Beebe, of Hillsdale.
Mr. J. V. Depuy, of Tecumseh.
Mr. Thos. Maynard, of Lake Ridge.
C. C. Young, Esq., P. M., of Pinckney.
Mr. R. S. Freeman, of Casco.
Mr. E. E. Carlton, of St. Clair.
R. B. Muscott, Esq., P. M., of Dexter.

and numerous others of whom we shall hereafter make honorable mention as practical illustrations of *bona fide* well-wishers to home agricultural interests. If any of our friends will act as Agents in their towns they will please to forward their names as such.

The MICHIGAN FARMER was first published in 1843, (20 years ago) and is one of the oldest agricultural journals in the West—and has had an acknowledged career of usefulness in Science, Agriculture, Stock-Raising, Horticulture, Floriculture, and all things connected with Farm Economy. It contains 48 large pages of reading—more than any other agricultural monthly—it publishes more matters on *home* interests in one month than any eastern paper does in six. The local press in this State acknowledge its worth, and our premiums offer the greatest inducements to subscribers.

In conclusion, we would ask our friends and readers, if the MICHIGAN FARMER is not worthy of your fullest support as a HOME AGRICULTURAL JOURNAL, and shall it not receive your substantial patronage and PAID SUBSCRIPTIONS FOR 1864?

AMERICAN POMOLOGICAL SOCIETY.

DISCUSSION OF STRAWBERRIES.

Prince, of N. Y., spoke of *Sennig's White Pine*, Apple, as a large fruit, white, tinged with pink, and extremely delicate—the only strawberry to which the term buttery can be, with entire propriety applied.

La Constance was named by Parsons, of N. Y. Hyde—had had it two years—thought valuable for amateurs, superior to Triomph d' Gand; did not dare to say it is suitable for market. Was afraid of these foreign sorts.

Prince, commended it highly, and Hovey, tho't it a remarkable variety—the only one of the foreign strawberries worthy of any extensive notice.

Triomph d' Gand was called up by Cook, of Mass., and was very fully discussed by members generally. The conclusions, generally, were to the effect that, although large, and of fair quality, it is only moderately productive, and can only be considered profitable as a market variety where high prices can be secured for an extra sized fruit.

Russell's Seedling, was proposed by Parsons, of N. Y.

Thomas, of N. Y., had seen them, in the city of Auburn, on a plantation alongside of Wilson's Albany, and having apparently the same culture. The berries were from one and a half to twice the size of Wilson's. Comparing them with Downer's, the flavor was better. They are perhaps superior to Wilson's in productiveness, and the growth quite strong.

Prince, thought it a doubtful recommendation; that the berry is half as large again as a large Wilson, and as the acid predominates, and it is soft, he thought it unworthy of cultivation, any more than Wilson or Downer.

Hooker's Belgique, nominated by Parsons, of N. Y., who remarked that its shape is peculiar—it can be packed like crackers in a box.

Another member thought it of fine flavor, but not productive.

Walker's Seedling, was called up by Bourne, of Rhode Island, who had cultivated it with many foreign and American varieties, and regarded it highly for family use. He considered it as one of the highest flavored berries.

The President, concurred in what Mr. Bourne had said of its excellent qualities. It is not a good market berry, in consequence of the difficulty of hulling it, but for amateur cultivation, it is a very desirable kind.

Bartlett, was inquired after, by Dewey, of Conn.

Bergen, of N. Y., spoke of it as a seedling produced by Mr. Fuller, of N. Y., but he appeared to think it not very valuable.

Prince, of N. Y., thought it very unproductive, unless grown in hills, and even then it does not bear very well. He believed it identical with the Brighton Pine.

Parsons, of N. Y., thought it of very high flavor, very similar to Boston Pine.

Elliott, of Ohio—as we have it, the foliage neither resembles the Boston nor the Brighton Pine. The fruit resembles the Boston Pine. We regard it as nothing remarkable.

Cutler's Seedling was called up by Bergen, of N. Y.

Manning, of Mass., had found it to bear more bad treatment than any other strawberry. It bears the winter well, gave a better crop than any other, and hulls easily.

Hyde had found it comparatively worthless.

Prince, characterized it as a hermaphrodite, and a good bearer.

Parsons, had found it his main reliance, this year as an earlier strawberry than any other, and bearing most abundantly.

Clement, of Mass., is a neighbor of Mr. Cutler, the originator, has known the strawberry for seven years, and considers it the most profitable berry for him, in the Lowell market.

Hovey's Seedling was brought forward by Moore of Conn., who thought we had nothing better than this.

The discussion of this variety took a wide range and while some growers had found it highly satisfactory, others had been entirely disappointed in it. Many reasons were given for the discrepancy of these results, but nothing was elicited that seemed to harmonize the varied and apparently contradictory experience of growers.

A large number of seedling new fruits were brought before the native fruit committee, a few of which were thought to be highly promising. Among these we would mention *Clapp's Favorite Pear*, a seedling originating with Frederic Clapp, of Dorchester, Mass., a fruit larger than the Bartlett, and without the musk that is, to some, so offensive in that variety, while it possesses nearly or quite all its valuable qualities. Ranked by the committee as "best."

Rodger's Hybrid Grapes were also on exhibition, and several of the varieties were presented for the consideration of the committee, among which were Nos. 1, 3, 4, 15 and 19, of these 4 and 15 were highly appreciated by the committee. The others, though unripe, were thought to be promising.

Mottled, an Ohio seedling, from Kelley's Island, was thought to be promising.

Maxatawney, from Philadelphia, grown against a south wall, was found to be excellent, where it can be ripened.

Adirondac, from J. W. Bailey, of Plattsburgh, N. Y., was also passed as an excellent early grape, and especially desirable for high northern localities.

After the completion of its business, the society adjourned to meet, in the autumn of 1864, at Rochester, N. Y.

Plymouth, Dec., 1863.

EDUCATION OF FARMERS.

According to the promise, we shall this week consider the RELATIVE TEMPERATURE OF LAND AND WATER, and the INFLUENCE OF BODIES OF WATER upon the TEMPERATURE OF THE ADJACENT COUNTRY.

The relation of heat from the earth, of which we have already spoken, does not consist solely in sending back into the atmosphere, the rays of heat received from the sun. The earth itself is a source or fountain of heat. In sinking deep mines and artesian wells, after you get below the line of invariable temperature, which, in this latitude is about sixty feet, it is ascertained that the temperature rises, as you descend, at the rate of about one degree in every 55 feet. In Paris is an artesian well 2000 feet deep, and the temperature at the bottom is 85 degrees. In Westphalia is one 2,200 feet deep, and the water has a temperature of 91 degrees.

Assuming, then, that this ratio of increase is uniform, as we descend into the earth, at a depth of 10,200 feet, or a little short of two miles, we shall have the temperature of boiling water, 212 degrees. At a depth of 25 miles, we would find a temperature of near 2400 degrees, a heat sufficient to melt *cast iron*. At a depth of from 35 to 40 miles, the heat would be sufficient to melt the hardest rocks—in fact, every known solid body would be in a state of fusion.

The earth, then, on this theory is a solid crust

25 to 40 miles thick, enclosing a vast mass of melted matter, 25,800 miles in diameter, glowing with the most intense heat, the solid crust bearing a less proportion to the whole mass, than the rind of an orange does to the orange.

We have no doubt this is the true theory by which to account for the existence of *hot springs, volcanoes*, and *earthquakes*. We shall not enlarge upon this, but mention it to show that the earth has a source of heat within itself—a heat which is constantly radiated into the atmosphere. This accounts for a fact which has been observed by every farmer. Let the earth's surface be frozen to a considerable depth before the snow falls.—Let then a heavy body of snow cover it through the winter, and in the spring, not only will the frost be out, but some kinds of vegetation will be growing under the snow. This is, beyond a question produced by the internal heat of the earth.

But this internal heat is radiated so slowly, and in so small quantities, and exerts so little comparative influence upon the temperature of the atmosphere, that for most practical purposes in this discussion, it may be disregarded, and the temperature of the earth's surface considered as almost entirely dependent upon the heat derived from the sun's rays.

The sun shines alike upon land and water, but the land has a much greater power of absorbing rays, than the water—estimated by some to be one hundred times greater. These rays warm the earth, at most but a very few inches deep, while they penetrate the water many fathoms.—The consequence is, that the earth's surface, for an inch or two deep, is heated intensely, while the heat is diffused through the water to much greater depth, heating the whole, of course, much less. The land thus becomes much warmer than water, while the sun shines upon it. But when the sun sets, and the air becomes cooler, both land and water radiate their heat back into the atmosphere. By a law of nature, that which matures most rapidly, decays soonest. And so the land radiates its heat much more rapidly than the water. The particles of the earth's surface are stationary, and do not readily change places with each other. But as the surface of the water is cooled by radiation, it becomes more dense, and consequently warmer. It sinks, and a warm stratum of water rises to take its place. This, in turn, cools, sinks, and is itself replaced by a warm portion. The consequence is, that the surface of the water remains, day after day, and night after night at about the same temperature, varying very little. But the land is much hotter by day, and much cooler by night, than the water.

These facts and principles explain what are called LAND and SEA BREEZES. Everybody knows that we have here along the lake shore, as indeed along the shore of every large body of water, a sea breeze every day in Summer, almost without exception. It is well known, too, that the hotter the the morning is, the sooner that breeze arises. The air, expanded by heat, becomes lighter and therefore rises, and cooler air must come in to take its place. As the land becomes heated by the sun's rays, it both reflects those rays and radiates its own heat into the air. The lower stratum of air, thus expanded by heat, becomes lighter, and rises, and the cool air from the water flows in to take its place. This is the LAKE OR SEA BREEZE.

But at night, the case is reversed. The other scale preponderates. The current is changed.—The air over the land becomes cooler than that over the water. It retains its position next the surface, but flows gradully towards the water, to supply the place of the warmer air, which is there rising from the surface. This is the LAND BREEZE.

The force of these winds, the land and sea breezes, depends entirely, other things being equal, upon the difference in the temperature of the land and water at the time.

TEMPERATURE OF LAND AND WATER.

It is then an ascertained fact, that the water is more uniform in its temperature than the land—*cooler in summer* and *warmer in winter*. It is stated, on the authority of an eminent naturalist, that the greatest variation in the temperature of the open sea, at any given place, is only 10 or 12 degrees, while that of the land is sometimes 160 degrees. This accounts for the well known fact, that, in temperate climates, very deep bodies of water never freeze over. The temperature of the water becomes so modified by the heat of summer, and to so great a depth, and it cools so very slowly, as never to be much if any below the freezing point.

Now when these facts are taken into consideration, we see at once, that such large bodies of water must exert a very strongly modifying influence upon the climate of the country adjacent. It must make that climate cooler in summer, and warmer in winter, just in proportion to the temperature and extent of the water.

The oceans carry on these modifications on a large scale. But two circumstances vary these modifications.

The first of these is *oceanic currents*. There are great currents in the ocean, in every part of it, which run through the surrounding water, from one part of the ocean to another, and from one ocean to another, like rivers running through a continent. These currents seem to have little connection with the tides, except as the tides sometimes quicken or retard their movements.

Now a current carrying warm water from a lower to a higher latitude, will permanently increase the temperature of that latitude. While a current carrying cold water from a higher to a lower latitude, will as permanently lower its temperature. But in our large lakes or inland seas, there are no currents exerting any such perceptible influence upon the climate.

The second modifying cause is found in the *prevailing winds.* According to the elaborate work of Professor Coffin, on the "Winds of the Northern Hemisphere," published by the Smithsonian Institution, as that work is quoted by Warren, there is a zone of westerly winds, entirely concircling the globe 23½ degrees in breadth, extending from north latitude 60, down to 36, 30, which is the southern boundary of Missouri.—This is a belt or zone, in which westerly winds largely prevail. It is these winds, blowing from the Pacific ocean, where the water is tempered by the warm Japan current, that gives to Oregon, and California their delightful, almost tropical climate. It is these winds blowing from the Atlantic, that makes France "sunny France," that is warm; that make Ireland the Emerald or Green Isle, and gives England also its moist, warm atmosphere and evergreen fields. It will be remembe ed that we are in the latitude of central Italy, and southern France, and that London and the south of Ireland are in the latitude of Labrador, and the southern part of Hudson's Bay.

We are in this zone of westerly winds, and our great Lake never freezes over. The temperature of the water of Lake Michigan is never much if any below the freezing point. At Milwaukee, directly west of us, during the severe cold of winter, and westerly winds and storms, the mercury has been known to sink as low as 24 or 25 degrees below zero, while, at the same time, it was only 9 degrees below at Mill Point, and Grand Haven. The reason of this is seen on a moment's reflection. The wind at Milwaukee, at a temperature of 25 degrees below zero, in its passage eastward, blows upon the water of the Lake, which is 30 degrees above zero. There is a difference between the wind and the water of 55 degrees. This comparative warmth of the water must inevitably and greatly modify the temperature of the wind, as it carreers across the Lake, a distance of 85 miles. Another important effect is produced by the uniform temperature of the Lake water. Its coolness retards the advance of vegetation in the spring, while as yet it is not cold enough to allow a frost.

It is to our residence on the eastern shore of this noble Lake, then, that we are indebted, under a kind Providence, for the preservation of our fruit trees, and the constant yield of their delicious products. The tender peach grows, without failure, every year. We have had peach trees in bearing at Mill Point, since 1852, and notwithstanding the two very severe winters, which killed the peach trees all over the country, we have not failed to have peaches every year since.—*Grand Haven Union.*

STRUCTURE OF PLANTS.

From Prof. Jas. F. W. Johnson's "Elements of Agricultural Chemistry and Geology."

Mode in which their nourishment is obtained—growth and substance of Plants—production of their substance from the Food they imbibe—mutual transformations of Starch, Sugar, and woody fibre.

From compound substances plants derive the greater part of the carbon, hydrogen, oxygen and nitrogen, of which their organic part consists.—The living plant possesses the power of absorbing these compound bodies, of *decomposing* them in the interior of its several vessels, and of *recompounding* the r elements in a different way, so as to produce new substances—the ordinary product of vegetable life. Let us briefly consider the general structure of plants, and also their mode of growth.

Of the structure of Plants, and the manner in which their nourishment is obtained.

A perfect plant consists of three several parts—a root which throws out arms and fibres in every direction in the soil—a trunk which branches into the air on every side—and leaves which from the ends of the branches and twigs, spread out a more or less extended surface in the surrounding air. Each of these parts has a peculiar structure and a special function assigned to it.

The *stem* of any of our common trees consists of three parts—the pith in the centre, the wood surrounding the pith, and the bark which covers the whole. The pith consists of bundles of minute hollow tubes, laid horizontally one over the other; the wood and inner bark, of long tubes bound together in a vertical position, so as to be capable of carrying liquids up and down between the roots and the leaves. When a piece of wood is sawn across, the ends of these tubes tubes may be distinctly seen. The branch is only a prolongation of the stem, and has a similar structure.

The *root,* immediately on leaving the trunk or stem, has also a similar structure; but as the root tapers away, the pith gradually disappears, the bark also thins out, the wood softens, till the white tendrils, of which the extremities are composed, consists only of a colorless spongy mass, full of pores, but in which no distinction of parts can be perceived. In this spongy mass the vessels or tubes which descend through the stem and

root lose themselves, and by them these spongy extremities are connected with the leaves.

The *leaf* is an expansion of the twig. The fibres which are seen to branch out from the base over the inner surface of the leaf are prolongations of the vessels of the wood. The green exterior portion of the leaf, is in like manner, a continuation of the bark in a very thin and porous form. The green of the leaf, though full of pores, especially on the under part, yet also consists of, or contains a collection of tubes or vessels, which stretch along its surface, and communicate with those of the bark.

Most of these vessels in the living plant are full of sap, and this sap is in almost continual motion. In spring and autumn the motion is more rapid, and in the winter it is sometimes scarcely perceptible; yet the sap is supposed to be rarely quite stationary in every part of the tree.

From the spongy part of the root the sap ascends through the vessels of the *wood*, till it is diffused over the inner surface of the leaf by the fibres which the wood contains. Hence, by the vessels in the green of the leaf, it is returned to the bark, and through the vessels of the inner bark it descends to the root.

Every one understands why the roots send out fibres in every direction through the soil—it is in search of water and of *liquid* food, which the spongy fibres suck in and send forth with the sap to the upper part of the tree. It is to aid these roots in procuring food, in the art of culture such substances are mixed with the soil where these roots are, as are supposed to be necessary, or at least favorable to the growth of the plant.

It is not so obvious that the leaves spread out their broad surfaces to the air for the same purpose precisely as that for which the roots diffuse their fibres through the soil. The only difference is, that while the roots suck in chiefly *liquid*, the leaves inhale almost solely *gaseous* food. In the sunshine, the leaves are continually absorbing carbonic from the air, and giving off oxygen gas. That is to say, they are continually appropriating carbon from the air. When night comes, this process ceases, and they begin to absorb oxygen and to give off carbonic acid. But this latter process does not go on so rapidly as the former, so, that on the whole, plants when growing gain a large portion of carbon from the air. The actual quantity, however, varies with season, with the climate, and with the kind of tree. The proportion of the whole carbon contained by a plant which has been derived from the air, is greatly modified also by the quality of the soil in which it grows, and by the comparative abundance of liquid food which happen to be within reach of its roots. It has been ascertained, however, that in our climate, on an average, not less than from one-third to three-fourths of the entire quantity of carbon contained in the crops we reap from land of average fertility, is really obtained from the air.

We see then, why, in arctic climates, where the sun one risen never sets again during the entire summer, vegetation should almost rush up from the frozen soil—the green leaf is ever gaining from the air and never losing, ever taking in and never giving off carbonic acid, since no darkness ever interrupts or suspends its labors.

How beautiful, too, does the contrivance of the expanded leaf appear! The air contains only one gallon of carbonic acid in 2500, and this proportion has been adjusted to the health and comfort of animals to whom this gas is hurtful. But to catch this minute quantity, the tree hangs out thousands of square feet of leaf in perpetual motion, through an ever-moving air; and thus, by the conjoined labors of millions of pores, the substance of whole forests of solid wood is slowly extracted from the fleeting winds. The green stem of the young shoot, and the green stalks of the grasses, also absorb carbonic acid as the green of the leaf does, and thus a larger supply is afforded when the growth is most rapid, or when the short life of the annual plant demands much nourishment within a limited time.

The growth and substance of Plants.

In this way the perfect plant derives its food from the soil and from the air; but perfect plants spring forth from seeds; and the study of the entire life—the career, so to speak—of a plant, presents many interesting and instructive subjects of consideration.

When a portion of flour is made into dough and this dough is kneaded with the hand under a stream of water upon a fine sieve, as long as the water passes through milky, there will remain on the sieve a glutinous sticky substance resembling birdlime, while the milky water will gradually deposit a pure white powder. This powder is *starch*, that which remains on the sieve is *gluten*. Both of these substances exist, therefore in the flour; they both also exist in the grain. The starch consists of carbon, hydrogen, and oxygen only; the gluten, in addition to these also contains nitrogen.

When ground into flour, these substances serve for food for man; in the unbruised grain they are intended to feed the future plant in its earliest infancy.

When a seed is committed to the earth, if the warmth and moisture are favorable, it begins to sprout. It pushes a sprout upwards, it thrusts a root downwards, but, until the leaf expanded the root has fairly entered the soil, the young plant

derives no nourishment other than water, either from the earth or from the air. It lives on the starch and gluten contained in the seed. But these substances, though capable of being separated from each other by means of water, as above stated, yet are neither of them soluble in water. Hence, they cannot, without undergoing a previous change, be taken up by the sap, and conveyed along the pores of the young shoot they are destined to feed. But it is so arranged that, when the seed first shoots, there is produced at the base of the germ, from a portion of the gluten, a small quantity of a substance (diastase) which has so powerful an effect upon the starch as immediately to render it soluble in the sap, which is thus enabled to take it up and convey it by degrees, just as it is wanted, to the shoot or to the root.* As the sap ascends, it becomes sweet—the starch thus dissolved changes into sugar. When the shoot first becomes tipped with green, the sugar is again changed into the woody fibre, of which the stem of perfect plants chiefly consists. By the time that the food contained in the seed is exhausted—often, as in the potato, long before the plant is able to live by its own exertions, at the expense of the air and the soil.

This change of the sugar of the sap into woody fibre is observable more or less in all plants. When they are shooting fastest the sugar is most abundant; not, however, in those parts which are growing, but in those which convey the sap to the growing parts. Thus the sugar of the ascending sap of the maple and the alder disappears in the leaf and the extremities of the twig; thus the sugar cane sweetens only a certain distance above the ground, up to where the new growth is proceeding; and thus also the young beet and turnip abound most in sugar, while in all these plants the sweet principle diminishes as the years growth draws nearer to a close.

In the ripening of the ear also, the sweet taste at first so perceptible gradually diminishes, and finally disappears; the sugar of the sap is here changed into the starch of the grain, which, as above described, is afterwards destined, when the grain begins to sprout, to be reconverted into sugar for the nourishment of the rising germ.

In the ripening of fruits a different series of changes presents itself. The fruit is first tasteless, then becomes sour, and at last sweet. In this case the acid of the unripe fruit is changed into the sugar of the ripened fruit.

The substance of plants—their solid parts that is—consists chiefly of *woody fibre*, the name given to the fibrous substance, of which wood evidently consists. It is interesting to inquire how this substance can be formed from the compounds, carbonic acid and water, of which the food of plants in a great measure consists. Nor is it difficult to find an answer.

It will be remembered that the leaf drinks in carbonic acid from the air, and delivers back its oxygen, retaining only its carbon. It is also known that carbon abounds in the sap. Hence carbon and water are thus abundantly present in the pores or vessels in the green leaf. Now, woody fibre *consists only of carbon and water*, chemically combined together—100 lbs. of woody fibre consisting of 50 lbs. carbon and 50 lbs. of water. It is easy, therefore, to see how, when the carbon and water meets in the leaf, woody fibre may be produced by their mutual combination.

If again, we inquire how this important principle of plants may be formed from the other substances, which enter by their roots, from the ulmic acid for example, the answer is equally ready. This acid also consists of carbon and water only, 50 lbs. of carbon with 37½ of water forming ulmic acid, so that when it is introduced into the sap of the plant, all the materials are present from which the woody fibre may be produced.

Nor is it more difficult to see how starch may be converted into sugar, and this again into woody fibre; or how, again, sugar may be converted into starch in the ear of corn, or woody fibre into sugar during the ripening of the winter pear after its removal from the tree. Any one of these substances may be represented by carbon and water only. Thus,

50 lbs. of carbon with 50 of water, make 100 of woody fibre.
50 lbs. " 37½ " 87½ of ulmic acid.
50 lbs. " 72½ " 122½ of cane sugar, of starch or gum.
50 lbs. " 56 " 106 of vinegar.

In the interior of the plant, therefore, it is obvious that whichever of these substances be present in the sap, the elements are at hand out of which any of the others may be produced. In what way they are produced, the one from the other, and by what circumstances these transformations are favored, it would lead into too great detail to attempt here to explain.

We cannot help admiring to what varied purposes in nature the same elements are applied, and from how few and simple materials substances the most varied in their properties, are in the living vegetable daily produced. This interesting

* In malting barley, it is made to sprout a certain length, and the growth is then arrested by heating and drying it. Malted barley, before sprouting, will not dissolve in water, but when sprouted, the whole of the starch [the flour] it contains dissolves readily by a gentle heat. The *diastase* formed during the germination effects this. By further heating in the brewer's wort, this starch is converted into sugar as it is in the growing plant.

subject is worthy of the study of every farmer in the land, and we shall continue it at some future period.

Planting Large and Small Potatoes.

The results of some recent experiments with planting large and small potatoes, performed by the writer, may prove interesting to readers.—The small potatoes used were in no instance more than an inch and a half long, and would average about the size of small plums. The large ones were from four to ten inches long and would weigh from half a pound to a pound, or more.—Both the large and small potatoes were cut so as to leave about the same number of eyes on each piece. Care was taken to plant them when the ground was in a moist condition in order to prevent the drying up of the small pieces. The large and small seed were planted in alternate rows, and after digging the contents of each row were placed in piles at the ends; these piles thus representing alternately the large and small seed, were then closely examined by several persons, and not the slightest difference could be perceived in the size of the potatoes. On being measured, however, the large potatoes were found in every instance, to yield *one-fifth more* than the smaller. The variety was the Prince Albert. This result was the more striking, as one of the rows planted with extra large seed (single potatoes of which weighed as much as eight of the small ones,) yielded no larger tubers than the smallest seed. The crop, from all the rows alike, was a good one, and many of the potatoes, even from the smallest seed, were from 8 to 10 inches long. We have tried this experiment but a single year; it is a common opinion that if repeated for several successive years—that is, if small potatoes are selected successively, the crop will ultimately run out. We have no personal knowledge of such a result, and it is worthy of careful experiment. At the same time the series of trials here reported show conclusively that farmers may use small seed for raising the main crop of consumption, so far as the size of the potatoes are concerned, although loosing something in amount, and that on any supposition, a small portion of the field should be planted with large potatoes for seed. As potatoes are now high priced, it may be well for farmers to save their small ones for planting and trial; and an hour or two devoted each year to a set of experiments may give them results of considerable practical value. They should, however, bear in mind that small seed are often planted on the poorest portion of the field, while larger selected tubers are given the best chance of the best cultivation.

It would seem that the chief advantage is large seed is in giving an earlier start and stronger growth, resulting in a larger crop—but the experiment must be repeated and varied many times before confident results can be reached.—*Country Gentleman.*

WINTERING BEES.

OUT OF DOORS.

The best method is (if your bees occupy the old fashioned box hives) to first place the hives upon stools about six inches high, set upon a close platform of boards laid upon the ground to keep the grass down, &c., around the hives. The board floor has no connection with the wintering of bees—it only forms a clean foundation for the hives to rest upon. The hives are set in rows about one foot apart in the rows, and the rows to be about eight feet apart. A close board fence is to be constructed along the north sides of the hives (it is presumed that they face south) about eight inches only above them, with the posts on the outside, with a return or elbow at each end within four inches of the outside hives, to run about a foot past each. The hives are to be about four inches from the fence, which leaves a space to fill with straw or hay, and also the entire space between each hive is to be packed firmly with straw or hay, then cover the tops likewise with straw, and over all place a couple of wide boards as a roof, descending to the south and resting on strips of boards, one end laid upon the fence and the other upon the hives, which gives an inclination for the roof. The boards are to lap, and may be nailed in position, as they are apt to be moved by high winds. The front of the hives require no other protection than pieces of wide boards cut off at length to reach nearly the top of the hives, and set in a slanting position before them as closely together as possible, taking care that the connections come between and not before the hives, so as to admit the rays of the sun, and light when the sun does not shine. These strips of boards serve to darken the hives, and also to protect them considerably from the cold, and if the cracks between them were covered with other pieces of boards, the bees must not try to get out till the weather becomes as warm as May; but if there is a warm spell which calls out the bees, all that has to be done is to throw down the boards and let the bees out as much as they desire, unless there is snow on the ground.

The above system of wintering bees in the open air is one that requires less labor and expense than any other that I can recommend.

WINTERING BEES IN MOVABLE COMB HIVES.

First take a box six inches deep and fit it close to the top of the hive; fill it with straw first, put about three inches thick. Take long straw,

cut it to fit the box and spread it one inch thick in the box, and cross it one inch thick the other way, tacking pieces of lath across the straw in the box, so as to have one inch span between the top of the hive and the straw in the box; bore two 1¼ inch holes, near the top of the box in front and rear, leaving a hole near the bottom, of three-fourths of an inch for egress—then place a wire cloth between the top of the hive and the box, tacking it fast by means of six carpet tacks, to hold it in its place. Straw is a bad conductor of heat, and a good absorber of dampness. The vapor and exhalations of the bees pass into the straw in the box, and are carried off by the air in the ventilator, leaving the bees warm and dry. You can vary according to the hived used. The main point is to keep a free circulation of air through the top of the box. You can increase circulation of air by crowding a stick through the holes, and straw from front to rear of the box.

Some bee-keepers put their bees in cellars, which is about as bad a place as they can be put in, unless the cellar is very dry, and then it might answer, if you ventilate the cellar three or four times in a week. When many bees are confined in a cellar or room, they require ventilation—must have it;—ten families of bees in a room ten feet square would destroy the vitality of the air in a day, except in very cold weather. I have been asked very frequently, by bee-keepers both far and near, what kind of hives I used and what kind were the best for wintering bees in the open air. I will merely say that I use Kidder's compound hive.—Dana Fletcher, *in Prairie Farmer.*

The Horse in the Stable.

The horse, valuable as he is at all time, is especially worthy of care now, when his price is so enhanced by the circumstances of the times.—Many at all times, except when doing their work, and all at this season of the year, are confined to the stable. Stable management is, therefore, of very great importance, and the health and durability of this noble animal is very dependent upon it.

The first point to be insisted on is a clean and well ventilated stable. It should be so constructed as to have a wide passage way or floor in front of the horses, to feed them. Above the manger a space should be left, a foot or two in width, clear, and the passage way should be the avenue for the supply of fresh air to the nostrils of the horse.

The most perfect feeding arrangement we ever saw a cast iron box so arranged as, by the removal of a bolt, to swing out into the passage-way, where it could be cleaned and fresh food supplied without the slightest interference from the horse. Such a box has the advantage, too, of resisting all attempts at crib-biting.

The stable should be cleaned out at least twice a day, and the floor sprinkled with a little gypsum. The importance of cleanliness to the health of the horse cannot be overestimated.

We heartily wish, however, that the almost universal practice of tying up horses in stalls could be dispensed with. A little liberality in stable room, which would allow each horse a box in which he might freely turn himself, and dispensing altogether with the halter, would add very greatly to his comfort and health. If this box were kept well littered there would not be the same necessity for frequent cleaning out. The droppings might be allowed to accumulate for a week or more, with saving to the manure heap and no loss to the animal.

The feeding of the stable horse should be very regular, he is fretted and worried by passing over the accustomed time. When a change of feed is necessary, it should be done with great care, giving a small allowance at first till the stomach becomes used to the change.

He must be cleaned and well cleaned, every day. A good currycomb, a brush, and an oiled woollen cloth are the utensils necessary. First, take the currycomb and begin at the top of the neck, back of the ears, working the hand both ways; proceed in this way till you have gone over the entire body and legs; then both comb and brush, and every other stroke draw the brush across the teeth of the comb to clean it. An experienced groom will do this instantly. This done, take your cloth and lay the coat, and remove the dust which adheres to the outside. The face and ears, must also feel the brush.

Few persons know how to clean a horse properly, and fewer still, perhaps, do it. If the above direction are daily followed, the horse will usually enjoy good health. Daily exercise is also absolutely necessary to the health of stable horses. If the feet of horses are brittle, and liable to break and crack, they must be well oiled once a week. A horse thus treated will always be ready to go when wanted, and his owner will not be ashamed to ride or drive him.

As to the feed of horses, good timothy hay and oats are the stand-by for all driving horses. If good corn blades could be had, we should give them the preference over all other long food.—Corn in the ear is the common food of horses in the country, but it is very wasteful to feed corn without grinding. The Pennsylvania farmer, who feeds chopped rye, thinks corn not fit for horses. We should like to see experiments made with the view to substituting a mixture of wheat bran and corn meal for oats, as the food of driving horses.

Rum is used in the West Indies instead of turpentine in the preparation of paint.

HOUSEHOLD WORDS.

For the Michigan Farmer.

Rural Songs—No. 3—Harvest All Gathered.

BY CHARLES BOYNTON HOWELL.

The last of the leaves are falling
From the branches of the trees,
Floating downward and onward,
Borne by the chilly breeze;
And the streamlets are floating swiftly,
Bearing their burdens of leaves,
While the north wind, at the night-tide,
Through the trees shora branches grieves.

The harvest now is gathered,
And the fruit a goodly store—
From the frost is safely garnered,
And the nuts, on the oaken floor
In the loft, are waiting the evenings
In the coming winter time,
When snow shall enrobe earth's bosoms,
And gleesome carols chime.

Verdant are fields where the sowed,
But a little time ago,
Went forth in the morn to scatter
The wheat—then its to sow.
And the last flowers of the summer
Lie blasted, withered and dead,
While unto the sunny southland
Have the Birds of Passage fled.

Soon will the Autumn's evening
Give way to winters morn,
And then on time's swift pinions
Will wane the winter forlorn.
Thus will our earth-forms wither
'Neath the poignant shafts of death,
And so will we find a spring-tide
With resurrection's breath!

And our souls, the Birds of Passage,
From the realms of the infinite one,
Soar back to the golden Eden
When shines eternity's sun—
Return to the sainted household,
With the FATHER for our guide,
His angels by our side!

University of Michigan, Ann Arbor, Nov. 17, 1858.

For the Michigan Farmer.

SLEEP.

Sleep defined—Night the time for sleep—Sleep affected by health and disease—Sleep of childhood—Stupor—Sleep of animals—External causes of sleep—Yawnings—The time of animal sleep—Snoring.

Sleep, says a writer on this subject, is the intermediate state between wakefulness and death—wakefulness being regarded as the active state of all the animal and intellectual functions, and death as that of their total suspension. There are two kinds of sleep—the *complete* and the *incomplete*. Complete sleep is a temporary metaphysical death, though not an organic one. The heart and lungs perform their offices with their accustomed regularity. It is characterized by a torpor of the organs of the brain, of the external senses, and of voluntary motion. Incomplete sleep is the activity of one or more of the cerebrum organs, while the others are in repose; this occasions dreaming.

Night is the time for sleep. All nature at this time seems locked in the arms of repose. The birds are still—the beast wander not forth. But at the dawn all nature awakes. The birds begin their songs, the cattle crop the grass, and man goeth forth to his labor.

Sleep is variously affected by health and disease. Man in time of health, sleeps in tranquility. He arises in the morning, refreshed and prepared to go forth to his daily labor. New strength is given him; langor has gone, and all the faculties, both mental and corporeal, are recruited. But the sleep of disease far different. It is short and unrefreshing; disturbed by fearful sights and frightful dreams. The pulse is agitated, with frequent starts and twitches of the muscles.

In childhood and infancy much more sleep is required than at any other time; owing probably to the growth of the body.

Stupor and sleep are different, though supposed by some to be synonymous. In both there is insensibility; but it is easy to awake a person from sleep, while it is sometimes almost impossible to arouse one from stupor. It is frequently the case in sickness that the person lies for several days in a stupor, totally insensible to every thing around.

Every animal passes some portion of its time in sleep—some more than others. The sleep of animals is different from that of man. It is generally short, irregular, and incomplete. A small noise or a slight touch, will awaken an animal, (except in case of stupor, which is different,) while in man generally, it requires a much greater exertion.

Though sleep be naturah and necessary to the langnid mental and corporeal faculties, yet it is frequently brought on by some external cause. Heat produces sleep. We witness in the summer season; it is common to see the laborer indulging an hour in the heat of the day to sleep. A heated church and a dull sermon, are almost sure to bring sleep. The heat of the church might be resisted, but the sermon is irresistible. Its monotony falls in leaden accents upon the ear, and soon subdues the most powerful attention. Variety, whether in sight or in sound, prevents sleep, while monotony of all kinds is apt to induce it. Excessive cold, as well as heat, produces sleep. A person without sufficient clothing on his bed, will find it difficult to sleep at night; but it is a fact that sleep is produced before death, when freezing takes place. The finished gratification of all ardent desires, produces sleep, with many other causes that might be considered, if necessary.

Yawning precedes and follows sleep. If a person be wet while going to sleep, his head nods and droops.

Some animals sleep in the day and wake at night, as is the case with the owl. Others have no particular time, but sleep at any hour they are not otherwise employed, as is the fact with the cat and dog. Other animals, like mankind, have night for their regular time to sleep.

Snoring is occasioned frequently by the force with which the air is drawn into the lungs in sleep. The respiratory muscles being less easily excited during this state, do not act so readily and it is with some degree of effort that the air is admitted into the chest. Those who snuff much, or sleep with their mouths open are most given to this habit. It is well to endeavor to breath thro' the nose and keep the mouth shut in sleep, and thus avoid the disagreeable practice of snoring.

Endearments of Home.

Joy, peace, and happiness, are found within the precincts of home. When the day, with its toils and duties, its burdens and trials, is past, how sweet it is to have some little quiet secluded spot, where we can flee to, and find a balm for all our cares and troubles; to find, amidst the turmoil and bustle of life, one to whom we can unbosom ourselves; one who ever greets us with a smile and a kiss, and whose cheerful presence is like glittering sunbeams—and receive that tranquil happiness our weary souls so much need. Oh, the rapture that words cannot express, the joy that language cannot define, is found within the hallowed influence of home. Sympathy, love, and devotion is found there; there lives the true, the trusty, and the faithful heart; there life is a beautiful mountain fed by a thousand streams, whose silver waters sparkle with rays of undisturbed happiness; there the stormy waves of trouble and tribulation roll unheeded by, and cares sink into a dreamless slumber; there we indulge in the warm, and gushing, and inspiring emotions of our heart's best affections. Happy is the man who has a little home, and a little angel in it. A house, no matter how little provided, will hold two or so—no matter how numbly furnished, provided there is hope in it. What if the curtains are calico or plain white, without border, tasel, or anything—suppose the floor is covered with a home made carpet, and the furniture but common—who cares? What if you do hear the low muttering and solemn sobbing of the coming tempest—what if it is winter, armed with the terrors of the elements—the howling winds, the piercing sleet, the blinding snow and rattling hail; heap up the fire—pile on wood. No matter of you haven't a candle, the glowing coals make reddening, coloring, shedding a sunset ray through the little room, just enough to talk by, not loud as in the highways, not rapid, as in the hurrying world, but softly, whisperingly, with pauses between for the storm without and the thoughts within to fill up. Then wheel the sofa round before the fire; no matter if the sofa is a settee, uncushioned at that, if so be it is just long enough for two or two and a half, with the two or two and a half in it. Then with your "dear little wife" closely nestled to your heart, recall the happy scenes gone by—the days when you used a wooing go—the night when you asked her if she'd be your wife, and then see the red and rosy lip all pouted out, and cheeks as if they were on fire, and hear her say, "now you just stop"—then to atone for your wrong, press her closer to you, and kiss the pouting lips back to their wonted shape. I am sure that under such circumstances, and at such a time, we can get at least sixty-nine and a half statute miles nearer "kingdom come" than any other point in the world. E. F. Housh, in *Pontiac Jacksonian*.

Children's Arms and Legs.

A distinguished physician who died some years since in Paris, declared:

"I believe that during the twenty-six years that I have practised my profession in this city, *twenty thousand children* have been carried to the cemeteries a sacrifice to the absurd custom of exposing their arms and legs naked."

On this the editor of the Philadelphia Medical and Surgical Reporter remarks:

"Put the bulb of a thermometer into a baby's mouth, the mercury rises to 90 degrees. Now carry the same to its little hand; if the arm be bare and the evening cool, the mercury will sink to 40 degrees. Of course all the blood that flows through the arms must fall from 20 to 40 degrees below the temperature of the heat. Need I say when these currents of blood flow back into the chest the child's vitality must be more or less compromised? And need I add that we ought not be surprised at its frequent recurring affection of the tongue, throat, or stomach. I have seen more than one child with habitual cough and hoarseness, choking with mucus, entirely and permanently relieved by simply keeping the hands and arms warm. Every observing and progressive physician has daily opportunities of witnessing this cure."

Mothers should be more careful of their little ones in this respect—their arms, hands, feet, and legs should be kept warm and comfortable—and if through negligence or want of knowledge it is neglected, the father should call the attention of the mother to it, and see that it is done.

An adopted child will, in time, become the daughter of the household. It is wonderful how tendrils will twine around household plants.

FLORICULTURE.

Narcissus.

The species and varieties of this plant are numerous. The Incomparable is perfectly hardy, and produces its flowers in April, which are called by some pasche, or paas flowers, by others, butter and eggs; perhaps because their bright yellow petals are so surrounded with large white ones. Some dislike the smell of these, and it is said that the odour has a pernicious effect upon the nerves; but the white fragrant double, as well as all the Roman and Polyanthus Narcissus, are free from this objection, being of a very grateful and agreeable smell. Some of these are justly held in great esteem for their earliness, as well as for their varied colours. The Grand Monarque de France, the Belle Legoise, and some others, have white flowers with yellow cups. The Glorieux has a yellow ground, with orange coloured cups; besides these there are some white and citron-coloured, as the Luna, and others entirely white, as the Reine Blanche, and Morgenster. All these varieties are very suitable either for the parlour or greenhouse, and may be planted in pots, from October to December, from two to three inches deep. The Double Roman Narcissus are very sweet-scented; if these be planted in pots, or put into bulb glasses in the month of October, they will flower in January and February.

Polyanthus Narcissus, are more delicate than Hyacinths or Tulips; when they are planted in the open borders, they should be covered about four inches with earth, and before the setting in of winter, it is advisable to cover the beds with straw, leaves, or litter, to the depth of six or seven inches, and to uncover them about the middle of March.

The Japan Pinks.

There are very few flowers that will give more general satisfaction than the varieties of Japan Pinks. They were originally obtained from Japan by M. Heddewig, a florist of Russia, and introduced into England in 1859, and in our own country the next year. The *Illustrated Boquette* thus describes the two varieties first obtained:

"*Dianthus Heddewigi* forms a neat, compact plant, growing from thirteen to sixteen inches high, and by good cultivation branching freely from the base. In some specimens the stems are of a uniform purple tint, while in others they are deep green; the leaves are linear oblong; the numerous flowers are terminal, borne singly on the branches of the stem, are single, and from two to three and a half inches in diameter, close, compact, five-petaled, and salver-like, with fringed margins. The predominant color is crimson, varying in the richest conceivable shades and varieties, some plants producing selfcolored, others parti-colored flowers, the former viewing with the finest dark velvet and damask tints, and these seem gradually bending in others with rich carmic and violet crimson; the centre of each flower is picturesquely marked with a broad radiating dark zone or ring, the rich velvety colors of which are exquisitely relieved by the central silvery gray anthers."

The magnificent Japan Pink *Dianthus Lacimatus* is derived from the same source of the *D. Heddewigi*, and distinguished from it by its taller growth, rather larger leaf joints, and its remarkably large and superb flowers, which are from three to four inches in diameter. It produces single and double-blossomed varieties. The petals have large, lacerated tooth-like fringes at the margin, from a half-inch to an inch in depth, which are very elegant, and produce a fine appearance. The colors vary from pure white and carmine rose to brilliant shades of crimson, with radiating zones or belts of richer hue toward the centre. The seedling varieties also include rich self, crimson and maroon tints in higher and lower degrees of maturity. The light-colored ones are at times finely stained with rose and violet crimson, while the dark ones are rendered very effective by mottled veins and streaks of white."

Double varieties of both the above have been obtained, and they are really magnificent flowers. By being hybridized with our best double China Pinks, a great variety of very fine double flowers have been grown, all of which are desirable. Seeds may be sown early in the spring in hot-beds, or in the open ground, and plants will flower well during the summer and autumn, even until long after early frosts. The plants will usually survive the winter and blossom abundantdantly the second season.

THE TEA ROSES.

The Teas are a delighted class of roses, and invaluable for in-door cultivation; without them our conservatories would would be almost barren of beautiful roses in winter, and our autumnal gardens would lose much of their beauty. True, we could have Lamarques, Souvenirs, and Amie Viberts, but where should we look for the delicious odor of the Teas, or the exquisite tints of their long, gracefully formed and beautiful buds?

The Bengal roses, with the exception of a few high colored kinds, there being few if any among the Teas, have been quite neglected for the latter; because they flower no more freely, their blossoms are generally smaller, and without the powerful odor distinctive of the class of Teas.

So beautiful and desirable, the French cultivators have turned their attention to the improvement of the Tea Rose, and with nearly the same success that has attended their efforts with other roses. In fact, all the varieties are of French origin, except the Devoniensis and Isabella Gray. From the fine old yellow, originally from China, have been produced all the shades of yellow, fawn, saffron, and coppery rose, often two or three in the same flower; and from the weak growing, quite tender, but truly beautiful yellow and blush, have been raised the vigorous, strong growing, and almost hardy sorts, like Gloire de Dijon and others. So that the original defects of habit have not only been improved, and their colors varied, but the strong perfume all retained. We now have Tea roses as easily cultivated as the old China, as free blooming, and so hardy that they require only the cold frame to winter them safely.

But the Teas, like other plants, only show their real beauty under proper treatment. As much as we admire a pretty plant in a small pot, it gives no fair criterion of its beauty. It is no uncommon thing thing to hear travellers who have seen them under Italian skies, lavish their praise upon the lovely Tea roses which ornament every villa, and cover the verandas and arbors, as the Prairies and Boursaults do in our own climate. To those who have not enjoyed all this, but who have been pleased enough with half a dozen half-starved blossoms on a potted plant, it seems to border on the marvellous; yet, when the opportunity has occurred to see them in our greenhouses, where they have "room and verge enough, the story becomes a reality. So the English cultivators have at last found out; and it is only since such skillful cultivators as Messrs. Paul, Lane and others have grown huge specimens for exhibition, six feet high and three feet through, literally covered with the freshest blossoms, that the Tea rose has claimed the place it is preeminently fitted to occupy.

In our climate, so much warmer than that of England, the Tea roses flourish in greater perfection, and, turned out into a rich soil, bloom throughout the summer and autumn. Taken up and potted in October, and sheltered in a frame till cold weather, then pruned and removed to the conservatory or greenhouse, they give a generous return of blossoms which is continued all the summer treated as before. When the object is to produce fine large specimens they should not be turned out into the border, but be repotted, and plunged, and removed to the frame before any severe frosts injure the unripened wood. In this way, with a renewal of rich soil, they soon form handsome specimens, and amply repay all the extra care and trouble.—*Hovey.*

Pampas Grass.—This superb flowering grass has been finely grown by C. M. Atkinson, gardener to J. G. Cushing, Esq., Belmont. Two plants, in large tubs, are just now magnificent with their silvery plumes. One of the plants produced thirty-four spikes, and the other nearly the same number. They are now standing in the large conservatory, and contribute greatly to its decoration at this season, when there are so few flowering plants.—*Hovey's Magazine.*

Verbena Culture.

The "rust," as it is called, of this popular bedding plant has become of wide spread growth, and to the trade, of serious moment. In character to our mind, it more nearly resembles the well-known pear blight, but probably quite distinct from that formidable disease. That neither is caused by insects, or at least such as are perceptible to the naked eye seems to us quite conclusive. We believe in the case of the verbena, to guard against "rust," the principal point to secure is the most favorable conditions of growth for the plant, both summer and winter. It is well known the verbena exhausts the soil in a years growth more than any other flower we cultivate, that is for its own following in the same position, and that the rust rarely exhibits itself on new soils, till at least the end of summer, and not then if it has plenty of room to spread. From favorable locations this plant has been quite frequently planted in the same soil year after year, this has tended to weaken its constitution, which again has been further added too by the usual methods of propagation. If anything is wrong about the plant it usually shows it first, and most, in the lower part of the stems, while the extreme points from the facility of its rooting all along the stem, are young and vigorous.

Now generally as nature has made a young plant in the fall for us we are apt to take up these rooted layers; they being too long for our purpose, we shorten in, which in doing we take away the most vigorous part of the plant, leaving the weakest to struggle along through the winter months in a confined position as best they may. The cuttings they afford are weakly, and all adds to the debility of the plant, and thus gives the fell destroyer rust, full play. We now practice a different method; instead of taking up layers we take the strongest shoots as cuttings, as late in the fall as it is safe to do so, and *never pinch off the tops*. By this means towards New Year's we get the strongest kind of cuttings, and by so doing giving favorable new soil and a good location in the greenhouse near the glass, we hope to keep rust at a respectable distance.

No plan probably has been more severely handled in winter and spring to secure cuttings than the verbena, and this along with an already weakened constitution, it has, like everything else in the animal and vegetable world, under such circumstance succumbed to the influence of disease —*Edgar Sanders.*

Lay Down Shrubbery in Winter.—The best way to preserve tender plants and shrubbery is *to lay them down*—that is, bend them down and cover with a few inches of earth, made firm with the back of the spade.

NATURAL HISTORY.

The Rhinoceros' Friend.

The rhinoceros' best friend, and the rhinoceros hunter's most tiresome enemy, is a little bird, the *Buphago Africana*, vulgarly known as the rhinoceros bird. It constantly attends on the huge beast, feeding on the ticks that infest its hide, the the bird's long claws and elastic tail enabling it to hold fast to whatever portion of the animal it fancies. If it rendered the rhinoceros no further service than ridding him of these biting pests, it would deserve his gratitude; but, in addition, it does him the favor of warning him of the approach of the hunter. With its ears as busy as its beak, the little sentinel detects danger afar off, and at once shoots up into the air, uttering a sharp and peculiar note, which the rhinoceros is not slow to understand and take advantage of; he doesn't wait to make inquiry, but moves off at once. Cumming asserts that when the rhinoceros is asleep, and the Buphaga fails to wake him with its voice, it will peck the inside of his ears, and otherwise exert itself to rouse its thick headed friend.

Language of Insects.

A most singular discovery, the credit of which appertains, we believe, to Mr. Jesse, is that of the antennal language of insects. Bees and other insects are provided, as everybody knows, with feelers or antennæ. These are, in fact, most delicate organs of touch, warning of dangers, and serving the animals to hold a sort of conversation with each other, and to communicate their desires and wants. A strong hive of bees will contain thirty-six thousand workers. Each of these, in order to be assured of the presence of their queen, touches her every day with its antennæ. Should the queen die or be removed, the whole colony disperse themselves, and are seen in the hive no more, perishing every one, and quitting all the store of now useless honey which they had labored so industriously to collect for the use of themselves and of the larvæ. On the contrary, should the bird be put into a small wire cage placed at the bottom of the hive, so that her subjects can touch and feed her, they are contented, and the business of the hive proceeds as usual. Mr. Jesse has also shown that antennal power of communication is not confined to bees. Wasps and ants, probably other insects, exercise it. If a caterpillar is placed near an ants' nest, a curious scene will often arise. A solitary ant will perhaps discover it, and eagerly accept to draw it away. Not being able to accomplish this, it will go up to another ant, and by means of the antennal language, bring it to the caterpillar. Still, these two are perhaps unable to perform the task of moving it. They will separate and bring up reinforcements of the community by the same means till a sufficient number are collected to enable them to drag the caterpillar to their nest.—*Once a Week.*

The Oak and the Squirrel.

It is not generally known, how much we, as a maritime nation, are indebted to our little friends, the squirrels. These active little fellows render important service to our navy; for most of the fine oak trees which are so important in shipbuilding, especially in vessels of war, are planted by the squirrel. A gentleman walking one day in the wood belonging to the Duke of Beaufort, in the county of Monmouth, had his attention attracted by one of these crackers of nuts; the squirrel sat very composedly upon the ground, and the gentleman paused to watch his motions. In a few moments the creature darted with wonderful swiftness to the top of the tree beneath which he had been sitting. In an instant he returned, carrying an acorn in his mouth; this he did not eat, but he began to dig a hole in the ground with his paws. When the hole was large enough and deep enough to please him, he dropped the acorn into it, seemed to eye the deposit with great satisfaction, and and then he set to work and covered up his treasure. When his task was accomplished, the squirrel again darted into the tree, and again returned in his character of acorn-bearer; and this load he disposed of as before. This he continued to do as

long as the observer thought fit to watch him. This little animal's industry was certainly not with the intention of providing us with oaks, but with that of providing for himself when food would be less plentiful; the holes were his winter storehouses.

As it is probable that the squirrel's memory is not sufficiently retentive to enable him to remember all the spots in which he deposits these acorns, the industrious little fellow no doubt loses a few every year; these spring up, and in due time supply us with the timber that our shipyards require.—*English Paper.*

Facing down the Lion.

As night comes on his humor changes completely. When the sun has set it is perilous to venture into a wild, wooded, and broken country. It is there the lion lies in ambush; it is there he is met in the pathway, which he intercepts by baring all further advance of his body. The Arab thus describes some of the nocturnal scenes which are continually happening.

If a solitary individual, a courier, traveller, or letter carrier, chancing to meet a lion, possesses a courage of the highest temper, he will walk straight towards the animal, brandishing his sword or gun, but carefully abstaining from using the one or the one or the other. He simply cries out—"Oh the robber the highwayman! the son of a mother who never said No!—! 'Dost thou think to frighten me?' Thou canst not know, then, that I am so-and-so, the son of so-and-so. Get up and let me proceed on my journey."

The lion waits till the man has come close up to him and then goes off to lie down again, a thousand paces farther on.

The traveller has thus to endure a long series of terrific trials. Each time that he quits the path the lion will disappear, but only for a few moments. Directly afterwards he again presents himself and all his movements are accompanied by horrible noises. He breaks off innumerable branches with his tail. He roars, howls, growls, and emits gusts of poisonous breath. He plays with the subject of his fantastic and manifold attacks, and keeps him constantly suspended between fear and hope, like a cat playing with a mouse.

If a man invested in such a difficulty does not allow his courage to fail him; if—to use an Arab phrase—he succeeds in firmly holding his soul, the lion will finally leave him and seek his fortune elsewhere. But if, on the contrary, the latter perceives that he has to deal with a man whose countenance betrays his fear, whose voice trembles, and who dares not articulate a word, he repeats over and over again, in order to terrify him still more, the manœuvre above described. He will approach him, push him, push him out of the way with his shoulder, cross his path every other minute, and amuse himself with him in various ways, until at last he devours his victim already half dead with terror.

The Shepherd's Dog.

"Without the shepherd's dog the mountainous land in England and Scotland would not be worth sixpence." It would require more hands to manage a flock of sheep, gather them from the hills, force them into houses and fields and drive them to market, than the profits of the whole would be capable of maintaining. And though this may be more true as regards the wild and head-strong black-faced sheep of the Scottish mountains, it is also correct as applied to our own; and most of the difficulties of gathering and driving will vanish in the presence of a really good dog. The sheep seem to know it if by instinct, before they have been many minutes under the charge of such a dog, that all their efforts to break away are fruitless, lest the flock be ever so wild and numerous, or the field of operations ever so rugged and unfavorable. It is surprising to observe what cunning a drove of pure Herdwicks will sometimes exhibit in their endeavors to baffle an untrained dog. While the driving or gathering ground is favorable to the dog, all goes on well enough; but no sooner do the wily creatures discover a suitable opportunity, than perhaps one or two break off on one side, and while the dog attempts to head them, others steal away in different directions on the other side; while these agile acts are going on, the mutual exertions and cheering of the whole body will depend to the utter discomfiture and amazement of the dog; but if at this juncture the tactics of a clever dog are brought to bear on the flock in an astonishingly short period the whole of them will be subdued and brought into order, and may be driven without difficulty so long as the master spirit is within call. Some dogs have the faculty of discovering sheep when buried to a considerable depth under the snow, as happens occasionally. A dog possessed of this quality is of immediate value equal to the return of sheep he releases or marks. A single dog has been known to point out unerringly the locality of many scores of drifted sheep in a day, even when several of them were at a depth below the reach of the shepherd's snow pole.

Mules in Central America.

One of the most striking characteristics of the mule is its aversion to the ass, and the pride he takes in his relationship to the horse; which instincts are met by obtrusiveness in the ass, and by indifference in the horse. If an ass, or any thing urged by the vanity peculiar to its race is related to the mule—happens to fall in with a drove of mules, he will, in all probability, be kicked and lamed by his proud relatives. A horse, on the contrary, takes a distinguished position in a drove of mules. The latter crowd around him, and follow his movements, exhibiting a violent jealousy, each trying to stand nearest his high bred relative. This instinct is employed to keep together the droves of mules, on a journey or at pasture, by putting a mare to the drove, with a bell round her neck called the bell mare. This animal is led day and night, and the whole drove is thus kept under control, and will not leave their queen. It is therefore very difficult to separate the drove. The man who leads the mare is instructed, in case of an attack from the Indians, to leap upon the back of the animal, and take refuge in the wagon encampment, whither the drove is sure to follow him. Even if the Indians succeed in separating any from the drove, they find it difficult to carry them off. The animals incessantly attempt to turn back, and the travellers are thus enabled to overtake the robbers and recover the stolen animals. The Indians, in consequence, use every means to get possession of the mare; and if they succeed in this, the whole drove is lost to their owners. If carriage horses are in a drove of mules, the danger is that the latter become dispersed; and this is the reason that, in these journeys, saddle-horses are not allowed to go loose, but are led by a servant.

Insect and Grain Eating Birds.

Tourists in Europe will, I am not commonly observant, notice one peculiar feature in continental scenery, and especially in the scenery of France. The landscapes may be beautiful and diversified by every possible charm, but in one particular respect they will be found almost utterly devoid of life. The Eye and Ear are struck together by the absence of familiar sights and familiar sounds. There is no chirping in the hedgerows, no twittering among the trees, no congregation of sparrows in the roads, or linnets in the fields. It is useless to look about for the rarer species of birds, as even the commonest sorts are absent, and the traveller is perplexed to think what can have become of all the little creatures which he is accustomed to associate with rural scenes. The truth is very soon told. The Frenchmen them. They parade them, day and night, for the sake of their morsels of flesh, and a small bird soon is a gone would be chased as eagerly as a rabbit or a hare. Traps are systematically set for them on every unlikely, and snared in every hedge. There is an idea, too, that birds destroy fruit, and economists will not submit to any such population. The first is the principal motive, combined, perhaps, with the instinctive passion for the chase, which, in France, admits of little better gratification.

Little birds, however, are not sent into the world for nothing. Under the mission of Providence, they fill all other creatures contribute their part towards the harmony of creation. Where that contribution is interrupted, the events become visible in a derangement or ruin. Birds are our insects and grubs. Where there are no birds, grubs, worms,

...sects multiply to a prodigious extent, and where this unnatural multiplication takes place the crops suffer.

During the year 1861 the harvests of France have given an unusually poor return, and this deficiency is attributed, in a great degree, to the ravages of sundry insects which is the reduction of certain birds to destroy. The subject has even attracted the attention of the French government, and, at the instance of the minister of agriculture, a commission was appointed to inquire into the matter and report what legislation is expedient.

From a preliminary report emanating from this commission it appears that their inquiries have been conducted with the elaborate accuracy characteristic of the French, and that the most experienced naturalists in France (M. St. Hilaire, M. Prevost, &c.) have lent the aid of their experience to these investigations. In them insects and birds have been carefully classified according to their several species; their habits of feeding have been closely observed, and the results ascertained and computed. It has been concluded that by no agency save that of little birds can the ravages of insects be kept down. There are some birds which live exclusively upon insects and grubs, and the quantity which they destroy is enormous. There are others which live mostly on grubs and partly on grain, doing some damage, but providing an abundant compensation. A third class, the birds of prey, are excepted from the category of benefactors, and are pronounced, too precipitately, we think, to be noxious in as much as they live mostly upon smaller birds.

If the arrangements of Nature were left undisturbed, the result would be a wholesome equilibrium of destruction. The birds would kill so many insects the insects could not kill too many plants. One class is a match for the other. A certain insect was found to lay 2,000 eggs, but a single tomtit was found to eat 200,000 eggs a year. A swallow devours about 300 insects a day, eggs and all. A sparrow's nest in the city of Paris was found to contain 700 pairs of the upper wings of cockchafers, though, of course, in such a place food of other kinds was procurable in abundance. It will easily be seen, therefore, what an excess of insect life is produced when a counterpoise like this is withdrawn; and the statistics collected show clearly to what an extent the balance of nature has been disturbed. Thus the value of the wheat destroyed in a single season, in one department of the east of France, by the *cecidomyia*, has been estimated at four millions of francs. The French vines, olives, and even the forest trees are also reported as suffering severely from this superabundance of insect life; so that, in consequence of the alarm occasioned, birds are likely to be hereafter protected in France without much legislation; and, indeed, their rise in public estimation has been signally rapid. Some philosopher has declared, and the report quotes the saying as a "profound" one, that "the bird can live without man, but man cannot live without the bird."

This is a splendid confession of past error; but what is to be done, seeing that the convictions of philosophers have not yet descended to the peasantry? Are sparrow-catching and birds' nesting to be made punishable? The question is really pressing. Yet the commissioners, though they distinctly call for a prompt and energetic remedy, and point to the great detriment which agriculture is receiving, are evidently doubtful as to the course to be pursued. They suggest, however, that persuasion should be tried before coercion, and that schoolmasters and clergy should endeavor to put the question in its proper light before the people.

The commission, in their report, present some curious statistics respecting the extent to which the destruction of birds in France has of late been carried. They state that there are great numbers of professional hunters who are accustomed to kill from one hundred to two hundred birds daily; a single bird has been known to, some boys at night with one hundred birds' eggs; and it is also calculated and reported that the number of bird's eggs destroyed annually in France is between 80,000,000 and 100,000,000. The result is, that little birds in that country are actually dying out; some species have already disappeared, others are rapidly diminishing.

Subscribe for the "Farmer" for 1862.

DOMESTIC ANIMALS.

For the Michigan Farmer.

DOMESTIC ANIMALS.

BY SLOW JAMES.

No. 11—The Camel.

This animal derives its name from its capacity of bearing burdens, and if it be true as alleged that a large one will carry a thousand or even twelve hundred pounds, it well deserves the name. Certain it is that its shape is exactly suited for bearing. Its back is arched and well corded and the hump helps to equalize the pressure. The legs are straight and set on broad feet. And the large coarse bone indicates great strength.

Some say that the camel came originally from a cold country, in the north of Asia, and that long custom has adapted it to the heat. It is possible that the wild animal may be found at present on the high table land of Central Asia, yet it is likely that the progenitors of the dromedary and camel were found in the countries where they are used.

We have very different accounts of the temper of this animal. Some making it a model of patience and meekness, others telling us that it is so vindictive that when it gets a spite at an individual he must lay down his clothes as if he were sleeping under, those the camel bites stamps and kicks till it is satisfied. After that the man may come into the camel's presence as it imagines that it has had revenge.

Both accounts are no doubt partly true, and both exaggerated. There is a great difference among them, some being gentle, other restive and cross. This much we may say, about the whole race, that to the Arab they are invaluable. To us they would be worthless. They bear heavy burdens. They feed upon the thorny plants which abound in the desert. They can bear hunger and thirst for a long time. In short the abuse which would kill a horse does them little injury.

But we would not be annoyed with them. They have a strong smell, they are cross, biting and kicking when provoked. When they start out in the morning they stop to brouse on every bush and till they get satisfied cannot be kept at an even pace. They have an awkward gait too, very disagreeable to ride. In short it has been remarked that the camel suits the Arab and the Arab suits the camel, but nobody else would put up with either. They have been introduced into our country for the purpose of traversing the sandy plains of the southwest. For this purpose they are said to answer very well, but beyond that they will never be used in this country.

The Arabs make use of every part of the camel. They make sal ammoniac out of the urine. The excrement answers them for fuel. They eat the flesh, drink the milk and manufacture cloth out of the hair. The flesh is try and tough, but the Arabs prize it for they can seldom get any better. The milk too is thin and strong taste, but is is counted a great delicacy by those who are both hungry and thirsty.

In short that miserable people poor by the sterility of their soil, and making themselves poorer still by their laziness, find the camel just what they want, but in our highly flavored country better animals take its place.

DOCTORING SICK ANIMALS.

One of the best systems of medical practice ever known, and which will probably stand at the head of the list for all coming time, is Nursing. Good care will do more than all the medicine in the world without it. Medicine is sometimes very good, but the most skilful physicians have found they could do but little with serious cases without that intelligent and careful watching at all times required for the removal or prevention of irritating causes, and known as good nursing.

The writer once owned a horse suffering from an excessive cough. Numerous remedies were prescribed by kind neighbors, enough, doubtless, to have killed him at once. I was concluded to discard all, to give the best attention to his wants and avoid everything which causes or prolongs a cold. This was during the changeable weather of autumn and he was blanketed whenever a chilly air was apprehended; he was worked very moderately, always avoiding perspiration, and he was fed on succulent food which was supposed to favor expectoration, and especially young clover. In a few weeks nature had performed a perfect cure; and if any one of the nostrums had accidentally been employed, and had not proved very prejudicial, it would unquestionably have received high praise for its efficacy. It is of the utmost importance to discriminate between a recovery *by virtue* of a medicine, and *in spite of it*.

To *keep animals in health*, is more important than to cure sick ones, and for this purpose a few leading rules should be always observed, and which cannot be out of place here.

1. Always feed regularly, as to time and quantity. Many animals are made sick by starving at one time, and stuffing at another. Especially, never *overfeed*.

2. The same rule must be observed with watering—and let the water be *pure*.

3. Never *overwork* animals—regular and moderate exercise will enable a working animal to do more the year through, by all odds, than any hurried driving at one time and resting and overfeeding at another and be infinitely less liable to disease.

4. Allow a regular supply of salt—it is useful, but an observance of the proceeding rules without salt, will be incomparably better than their infraction with it.

5. Never feed musty or bad food. If musty fodder must be used, pass it through a rapid cutter, and moisten, salt and meal it.

6. Avoid unwholesome or poisonous plants in pastures and in hay.

7. Guard all animals against cold rain, and snow falling on them, and against lying on cold wet ground.

8. All changes of food must *gradual*. If from hay to grass, let the grazing be but an hour the first day, two hours the next, three the next, &c. The same caution must be carefully observed, in beginning to feed with roots, grain, &c.

9. Be careful that animals always have enough of exercise,—and plenty of pure, fresh air. Stables must be well ventilated—animals often become sick from breathing foul air.

10. Lastly, and by no means least, let strict cleanliness be observed. All animals, even pigs, kept clean and curried, are found to maintain their flesh better, or fatten faster, than when dirty and neglected—and cleanliness is more important to health than for flesh.

We do not propose to go into a long discourse on diseases and their remedies, but there are a few of the more comon diseases and some simple remedies for them, a knowledge of which may be useful for the inexperienced.

Horses.

Colic and Inflammation of the Bowels, are two very common diseases, often confounded together. With colic the pulse is natural, not fifty a minute, the animal often rolls, the disease intermits, and there is usually not much fever. With inflammation there is much fever, the pulse sometimes rising to nearly a hundred a minute, the attack is gradual, and the disease is gradual, and the disease does not intermit.

The remedies proposed are of the simplest character, and not those often used by professional men.

For Colic—If from badly digested food, give a pint or more of a solution of saleratus; or a mixture of half a pound or upwards of fresh powdered charcoal with thrice its bulk of water, is still safer. Spasmodic colic may be treated with the charcoal internally, and brisk friction externally, and a quart of peppermint tea with a spoonful of powdered cinnamon may be given. Ginger tea is also useful.

For Inflammation of the Bowels—This is a difficult disease to cure, and horses generally are killed by the amount of irritating medicines administered, which only add to the disease, such as whiskey, gin and molasses, salts, castor oil, gunpowder, &c. Give a drink of slippery elm every hour, to allay irritation - keep the animal quiet—let him have but little food, and let that be weak gruel. Avoid bleeding.

Scours or Diarrhœa—Sometimes this arises from irritating matter, in which case it must not be checked too soon. When it proceeds from exposure after over exertion, let all the drink the animal takes be slippery elm water, with occasional doses of a spoonful of charcoal. The food should be dry. Raspberry leaf tea is a good drink after the symptoms begin to subside. In severe cases, 20 or 30 grains of kino may be given in a quart of thin flour gruel, twice a day.

Cold or Catarrh—This is a common and well known disease Medicines generally are of little use, except to delay attending symptoms. Good nursing and careful management is best, avoiding any exciting cause calculated to increase the disease, or retard the gradual cure that nature comonly effects. If followed or accompanied by a hard cough, green food should be given—if in winter, turnips or rata bagas with warm wet meal are useful. A moderate feeding of fresh apples two or three times a day operates as an expectorant and relieves the cough.

Heaves—When a horse is fed on musty hay, and his cough begins so assume symptoms of heaves, immediately procure good hay if possible, or else cut the hay fine and always feed it wet, to which add a spoonful of ginger daily until the symptoms disappear. A horse which has the heaves once established, cannot be cured, but the disease may be kept so latent as to be of no inconvenience, by always feeding wet chopped food.

Scratches—[A cutaneous and troublesome disease just above the hoof.] Keep the affected parts clean, by washing with soap and water, and then apply a solution of chloride of lime.

Distemper or Horse Ail—[attended with thickened discharges from the nose, and sore throat, often a tumor under the jaws, and weakness.] Rub and curry often to promote warmth and circulation, keep warm and comfortable, and if the animal refuses to eat, withhold all drink, but place before him warm mashes which he will swallow when he finds his water is not given. He will often eat wet hay, slighly salted, if given him morsel after morsel by the hand. Scraped carrots are excellent. The principal object is to keep up his strength and flesh, until the disease runs its course. A seton is is often advisable, diverting the disease.

Cattle.

If the ten rules already given are carefully observed, cattle will scarcely ever become diseased; and if they do, immediately examine to see if some of these rules are not broken. The

following remedies may be applied; in case of a few of the more common diseases.

Horn Ail—The symptoms are dullness, failure of appetite giddiness, failure of flesh, the horn generally feel cold. The head and not the horn merely is diseased. Boring is generally of no use, and can only give temporary relief where there is a pressure of matter in the horns. Hornless cows have it sometimes. It generally occurs to animals in low condition, with deranged digestive organs. The best remedies are to keep them in a warm shelter, and give warm, nourishing, and stimulating food. If the animal should happen to be in high condition, feed lightly. Most of the remedies have their reputation because they did not *prevent* natural recovery.

Garget or Caking of the Bag—Let the calf suck, after having drawn off a part of the milk; and if there is any danger of matter forming, rub the udder with a liniment of equal parts of goose oil and hot drops. If painful, wash with weak lye. It is very important always afterwards to milk very clean. Avoid high or stimulating food.

Hoven—occasioned by eating to much fresh clover or other green food. The preventive is caution in turning into fresh pastures, allowing but a short time at first. In mild cases, a cure may be effected by a quart of saleratus water; in severe and threatening ones, a penknife must be thrust into the paunch through the skin, two or three inches forward of the hip bone.

Foul in the Foot—caused by standing long in filth—may be cured by removing to a dry clean place, washing with soa then with chloride of lime, and applying curriers' oil. Washing with salt and water is useful.

Lice—Wash the skin, morning and night, with a decoction of 2 ounces of lobelia seeds in 1 quart of boiling water; after standing 2 hours, apply with a sponge.

Choked Cattle—may be relieved, when the obstruction is high, by thrusting the arm at full length down and seizing it with the fingers. To prevent the animal biting dangerously, pass the arm through a wheel box or clevis, held firmly in the mouth; or still better, through a wooden box made on purpose, with projecting ends to hold by. If far down the obstruction may be pushed down with a flexible stick with a round soft knob.

To prevent a Cow sucking herself—thrust a hickory stick 4 inches long, and half an inch in diameter, through a slit made in the nose, so that the stick may project each way horizontally. If the stick is a little smaller at the centre, it will not come out.

Colic, Inflammation of the bowels, and diarrhœa, require nearly the same treatment as with horses.—*Tuckers' Annual Register.*

Apples as Food for Cattle.

Every year or two, some one contrives to start the question whether apples are worth anything for feeding stock. Lately, an article has gone the rounds the purport of which is that apples are very bad food for milch cows—that they dry up the milk. This, it is argued, is proved by the fact that when cows get into an orchard or at a pile of apples, they give less milk in consequence. Hence it is inferred that the apples are decidedly unwholesome. It probably never occurred to those who take this view, that if cows should get into a cornfield, or obtain access to a large quantity of grain of any kind, or other highly nutritious food, they would be likely to be affected in a similar way that they are from eating apples. A surfeit is produced, resulting in more or less fever, and the milk of course dries up. But should this effect be attributed to the unwholesomeness of the food, or the undue quantity eaten? No observing farmer could believe that grain or roots, prepared and fed in proper quantities could be injurious to cows; on the contrary he knows that a judicious use of these articles is beneficial, both in reference to the condition of the cow as to flesh and to the quantity and quality of the milk.

Now there are plenty of examples which show that apples in a proper stage of ripeness, and fed in proper quantities, promote the thrift of horses, cattle and swine. That they produce different effects in some cases does not invalidate our position; it only shows that certain requisites in regard to the condition of the food or the mode of feeding were not complied with. In reference to the proper stage of ripeness, as above specified, it should be observed that the nutritiveness of apples is not developed till they approach this stage. It is so to a considerable extent with potatoes. They are neither wholesome or nutritious till they are matured. Thus, when cows eat unripe apples they may be injured by them. Boys are sometimes injured in the same way. If the apples are very acid, they set the teeth on edge, like sour grapes, and prevent the animal from eating a proper quantity of other food. This is sometimes the case with hogs when they cannot get ripe apples; but when they can have their choice, they will soon pick out those which are ripe and palatable. It is so with cows; they may eat hard, unripe apples, and they may be injured by them; but it does not follow that ripe ones would have been injurious.

We have known repeated instances where considerable quantities of apples have been stored for feeding stock through the winter. They were given to milch cows as well as to other cattle, at the rate of from half a peck to a peck daily, and we never heard of any but a favorable from such a course. We have known poce from apples used for cider, late in the fall, fed to milch cows, and the milk was increased in quantity and improved in quality by it. If it becomes sour by fermentation, it is unwholesome. Hence it is only in cool weather that it can be used to advantage.

Last year, Mr. Peters, of Southboro', fed several hundred bushels of apples to his cows during November and December. They were chiefly defective apples that were thrown out from winter varieties as unmerchantable. They produced an obvious increase in the quantity of milk. As the milk was sold, the quality was not particularly noticed.

We do not contend that it is an object to raise apples for feeding stock, in this part of the country. If due attention is paid to obtaining the best varieties, they will sell for more than they are worth as food for stock. But there may be

occasional seasons, like that of 1862, when the production of apples is so great that all cannot be sold at a profit; and in such cases there need be no hesitation in feeding them to stock, including milch cows.—*Boston Cultivator.*

Cattle Fastenings.

What is the best method of confining cattle to their stables? This question was asked through our columns a few weeks since, and as none of our correspondents have yet given their opinion upon the subject we propose to say a few words in relation to the different methods employed for that purpose. The principal appliances in use for this purpose are slip-stanchions, bows, ropes, and chains,

Well constructed slip-stanchions are undoubtedly the safest, most expeditious, and convenient method yet adopted, and extensive dairy farmers, after trying various methods, have permanently adopted it. It possesses anoter advantage—cleanliness—which, in a dairy is a great desideratum, as the animals cannot move backward and lie down in their own manure. But in spite of all these advantages, we think that there is one drawback in their use, and that is the inconvenience to the animals. The immoveable stanchion must be uncomfortable, and the position which the animal is obliged to maintain, without any power to change, must be a painful one at times. The old-fashioned bow and ring, although a clumsy and inconvenient method, is safe and very comfortable for the animal, as it allows a free movement of the body. The simplest form is a rope with an eye in one end and a knot on the other which is passed around the neck of the animal and the upright or stanchion, and tieing the knotted end through the eye. The chain and ring method which is in vogue throughout the country, is a neat, comfortable and secure mode of fastening, and we think upon the whole we should give it the preference to all others. It is easily operated, durable, and comfortable for the animal, and where but a small stock is kept it will be found to be all that is desired.—*Maine Farmer.*

Carrots for Horses.

Oats and carrots fed to horses alternately, are fed better than oats alone. The carrot, when analyzed, gives but little more solid matter than any other root, 85 per cent. being water; but its influence in the stomach on the other articles of food is most favorable, conducing to perfect digestion and assimilation. This result, long known to practical men, is explained by chemists as resulting from the presence of a substance called *pectine*, which operates to coagulate or gelatinize vegetable solutions—thus promoting their digestion. Horses are particularly benefitted by the use of carrots, which are also valuable as food for cattle, especially milch cows, increasing the quantity and quality of milk, while adding to the flesh of the animal. It is estimated that one acre of carrots will more than represent, in value of product, ten acres of oats, and yet the latter, as a crop, is far more exhausting to the soil.

All kinds of grain command a high price, and the cost of feeding their horses on oats will be doubled to farmers the present winter. Those who have fortunately raised a quantity of carrots will therefore be glad to test the value of our advice. Two bushels of oats and one of carrots are better food for a horse than three bushels of the former; and the relative quantity of carrots may be increased where the horse is used principally for light work. With such food the digestion will be improved; the horse will enjoy good health and spirits, and always show a loose hide and shining coat with little trouble to the groom.—*Working Farmer.*

Poultry in Winter.

Few farmers take such care of their fowls as to make them a source of profit. The term "dung-hill fowls" is a literal description of the poultry usually found in country farm-yards. They are allowed the range of the dung-hill, with such pickings as they can find in the yards and stables, but seldom are they favored by a regular system of feeding; and the arrangements for housing them in winter are often more shabby still. Every good poulterer knows that if hens are kept warm in winter, and well fed, they will continue to produce eggs every day, and thus pay for themselves and the care they get every three months of their existence. No product of the farm pays better than eggs, which will always command a quick and remunerative price, especially in cold weather, when, from a diminished supply, the cost to the consumer is almost doubled. The poultry house should be constructed in a sheltered location, with windows facing the east and south, and with a cellar three or four feet below the surface, where the hens may retire in the severe weather, and be secure from the effects of cold. To maintain an equable temperature, it may be desirable to provide a small air-tight stove, which will heat the apartment during "cold snaps," and thus the hens can enjoy summer weather and the farmer fresh eggs throughout the entire year.

DEATH TO RATS.

During the winter months rats naturally resort to barns and ricks both for shelter and food, and are consequently a great nuisance to farmers. For the benefit of the readers of the *Michigan*

Farmer we give them the preparation recommended for their destruction by Dr. Uer, a celebrated German chemist. This compound is a dead shot, and if used will send them to "parts unknown," quicker than "Costar's Exterminator," as it contains much the same ingredients. Farmers if you are troubled with rats, try it—you can obtain the articles at any drug store:

Melt hog's lard in a bottle plunged in water of temperature of 150 degrees Farenheit; introduce into it a half an ounce of phosphorus for every pound of lard, then add a pint of proof spirit of whiskey; cork the bottle firmly after its contents have been to 150 degrees, taking it out of the water and agitating till the phophorus becomes uniformly diffused, making a milky looking fluid. The spirit may be poured off on the liquid cooling; and if you then have a fatty compound, which after being gently warmed, may be incorporated with a mixture of wheat flour or sugar, flavored with oil of rhodium o. oil of anise seed, &c., and the dough, on being made into pellets, should be laid at the rat holes; being luminous in the dark, and agreeable both to their palates and noses, it is readily eaten, and proves certainly fatal. The rats issue from their holes and seek water to quench their burning thirst, and they commonly die near the water.

RYAN, THE WEATHER PROPHET, SPEAKETH.—Ryan, the immortal weather prophet, has again opened his mouth for the instruction of the people. He communicates to us the following information with regard to the weather for the coming winter. "Southwest and northeast are the contending points of the wind till the first of March next. Southwest will prevail. Some west, some northwest, then cold, sudden changes, doing and undoing is order for winter. If we have south or southwest wind on the 7th and 8th of January we will have good sleighing for that month, but if we have northwest wind, cold, or snowing on those days, we will have sleighing.

The fourth and fifth of February is the last chance for sleighing this winter, and these are the days for the February freshets. Water courses should be put in order for those days. We are going to have rather a mild winter."

The "Scientific American."

This is the most valuable journal of its class now published, and one of the best Mechanical and Scientific papers in the world, commences a new volume on the first of January. We cannot too strongly recommend this paper to the public. It is the best school for your sons and daughters, the best mentor and instructor for yourself, to be found. Its engravings are always of the very highest style—beautiful specimens of the art. Its pages are admirably printed, clear, and readable. Its articles on Science, Agriculture, Health, Mechanics, Inventions, and nearly all Useful Aarts, foreign and domestic, are not alone learned; they are interesting as well as instructive, such as children and youth will delight to read. If there is a royal road to learning it may be found here, where study is made a pleasant recreation. Every one of our readers should subscribe to the *Scientific American*. Terms, one dollar for four months, three dollars a year: Munn & Company, publishers, 37 Park Row, New York.

THE WOOL MARKET.

The price of Wool has not materially changed since our last issue, ranging about the same as per our November quotations, with less activity, as farmers are generally getting their other productions, such as wheat, corn, oats, hay, mutton, beef and pork, to market. We have met friends from different parts of the State, who not only have considerable quantities on hand themselves, but inform us that there are large lots in store in their respective localities, and that there is a disposition among those who have held on thus far, to keep their wool until they get 80 or 90c. per lb. believing it "as good as money in the bank."—One fact should command the attention of our readers, that is—that altho' *Gold* has been "up and down like a pump handle" within the last 60 days, that *Wool* has permanently maintained itself, showing that the variance in the value of specie has not materially affected Wool.

Prices in Detroit range as follows:

Pure blood Merino, extra clean,	72a75c.
Mixed " " good order,	65a70c.
Canada long clean Fleece,	58a65c.
Grand Rapids,	60a72c.
Three Rivers,	60a70c.
Jonesville,	60a70c.
Dowagiac,	72a80c.
Romeo,	70a75c.
Albion,	72a75c.
Niles,	65a70c.
Buchanan,	65a70c.
Ann Arbor,	68a72c.
Pontiac,	70a75c.
Adrian,	68a75c.
Kalamazoo,	65a75c.

The eastern markets are not active, yet firm, and the stock light, this will continue until after annual account of stock is taken and settlements made.

In *New York*, prices rule for Native Fleece 75a 88c., as to quality; Pulled at 73a80c.; California, at 45a50c. per lb.

In *Boston*, Full blood Merino 80a82c.; western mixed 72a78c.; Pulled, extra 85a90c.; Superfine 75a85c. per pound.

In *Philadelphia*, prices are ranging from 76a90c.

After New-Year's manufacturers will be obliged to purchase with more activity to replenish their stocks, and we feel justified in stating to producers in Michigan—*that Wool will take a decided step in advance of present prices.*—W. S. B.

LIVE STOCK MARKETS, &c.

DETROIT, Monday, Dec. 21, 1863.

The cold weather for the past three days has created a great activity in the packing houses in Detroit, they have commenced work with a rush and everything is pressed into service. The streets are literally lined with pork until to day, when a panic took hold of packers in consequence of the best hogs, over 300 reaching 8c. and many of them talked of closing in for the present.

DRESSED HOGS.—Heavy and good conditioned, are readily taken at 7@7¼. Medium ranges from 6½ to 7c. common at 5½@6¼.

BEEVES.—The prices ruling the market, were as follows:

First quality	$4 50@	₩ cwt.
Ordinary	2 35@3 50	"
Common	2 00@3 00	"
Inferior	2 00@2 50	"

SHEEP.—The average price $3 75@4 50 on foot. Dressed at 6 a 7 cents per lb.

As much depends upon the Albany market to govern the Western prices we give it from the *New York World*.

ALBANY, Monday, Dec. 14.

BEEVES.—The New York speculators entered the market easily last week, a number of them going to Buffalo and Suspension bridge and buying large droves, in anticipation of an active demand at even higher rates than those established last week. But they are disappointed. The advancing prices of the last month have had the effect to draw but a larger supply, especially from Michigan and Illinois, and this circumstance, combined with the fact that the Brighton market was not up to expectation, has checked operations and discouraged trade to the extent of knocking down prices 20c. a 25c. per 100 lbs. live weight. How it will be in New York is somewhat doubtful, but even the most sanguine will be content if they get out whole. About 2,500 head have changed hands at our quotations. There is scarcely any noticeable improvent in the average quality.

The cattle in the different yards are from the several states and Canada is the following numbers:

From New York	797 head
From Illinois	1,096 head
From Michigan	1,182 head
From Ohio	540 head
From Indiana	102 head
From Canadas	93 head
Total	3,820

PRICES.—Toward the close the market was dull, at the following quotations:

	This Week.	*Last Week.*
Premium (per 100 lbs.)	$ a	$ a
Extra	5.70 a 6.10	5.90 a 5.25
First quality	5.00 a 4.50	5.20 a 5.60
Second quality	4.00 a 4.50	4.20 a 4 70
Third quality	3 00 a 3.50	3.20 a 3.60

SALES.—The following are among the transactions reported: L. Crane & Co., 120 Michigan at 4c. per lb.; average 1,250 lbs. P. McAffrey resold 92 head of the Michigan bunch above quoted at a fair commission. C. Johnson, 55 Michigan at $58 per head; average 1,354 lbs. Also, 59 do. at 4¾c. per lb.; average 1,368 lbs. Thomas Gillies, 84 coarse Michigan at $4.90 per 100 lbs.; average 1,500 lbs. John Simmons, 42 Illinois at 3.40 per 100 lbs.; average 900 lbs. Also, 37 Michigan at 54.50 per head; average 1,200 lbs.

SHEEP.—The sharp, cool weather of Thursday and Friday infused a new spirit in the Sheep trade, and some competition springing up between the buyers, the supply being light, prices went up 50c a 50c. per head. The weather, however, has again changed, warm rains falling on Saturday, and the demand had slackened considerably. We heard of no sales on Saturday, up to the morning of which about 1,600 head had changed hands at 5¾c. a 6c. per lb. These prices were for bunches averaging from 90 to 100 lbs. An inferior lot would not bring over 5¼c; and choice extra heavy would command 6¾c. Included in the sales were 550 Michigan, averaging 101 lbs., sold by R. C. Oon to McGraw Brothers at 6c. per lb.

HOGS.—The demand is quite good, considering the unfavorable weather, and the prices of last week have been well maintained. The bulk of western hogs coming forward, however, are of an inferior quality, and sell somewhat slowly. Most of the Albany packers have commenced operations for the winter, but thus far have bought sparingly on account of the high prices and the poor, half-fated conditions of most of the stock. Sales at the yards of Smith and Brown, for the week, 4,220, at prices as follows:

Prime heavy western corn fed	$6.37 a $6.65
Medium to light western corn-fed	5.87 a 6.25
Michigan and Indiana	5 62 a 6.00
Heavy state, prime and fat	6.25 a 6.62

There are no Still fed or Stock Hogs in market, and no demand for the latter description.

DRESSED HOGS.—There is more doing, yet the sales are restricted by the light supply; Choice State Hogs would have commanded to day, for the East, not far from $8.50. The receipts are light. We report:

30 head State, averaging 246 lbs.	8c.
20 head averaging 280 lbs.	8c.
27 head Pigs	7¾c.
9 head averaging 479 lbs	8¾c.
700 head Hooks, rejecting all light	8c.
35 head State, averaging 284 lbs.	p. t.

NEW YORK MARKET.

Compiled for the Farmer from the latest New York advices to the date of going to Press.

FLOUR.—State and Western Flours firm but dull. Sales, 6,500 bbls. at $5.90 a $6.10 for supers; $6.40 a $6.55 for extra State; $7.40 a $7.50 for round hoop Ohio, and $6.70 a $10 for medium to choice grades of Western extra trade and family brands. A slight decrease since November.

WHEAT was not so active, but very firm. Sales 60,000 bu. at $1.45 a $1.50 for Spring; $1 52 a $1.58 for Red Winter; $1.60 a $1.68 for Amber do.; nearly all Amber Spring at $1.50 for export, but including Amber Chicago, $1.48. There was some prime old Spring in the market at about $1.37¼. No improvement—declined.

CORN was 2c. better and active. Sales 160,000 bu. at $1.25 a $1.27 for Western mixed in store; $1.28 for do. afloat, and $1.26 for White Western. Advance of 3 a 5c. per bushel.

OATS were firm at 90c. for Canada, with a disposition to insist on a further advance. 3 a 5 cents better than November prices.

PORK was dull and heavy for new Mess, but new Prime and old Mess were better with some speculation. Sales 2,200 bbls at $18.12½ a $ 8.25 for new Mess, $17.12½ a $17.25 for old Mess $12.25 a $12 50 for new Prime, $14.25 for sour Mess, $16.62½ for thin Mess. No material change in price.

LARD was firm, but inactive. Sales 1,200 bbls. and tcs. at 11½c. a 12¼c. for the whole range, but mainly No. 1, and prime Steam at 11½c. a 12c. Prices unchanged.

DRESSED Hogs steady at 7¾ a 7¾c. for Western, and 7¾c. a 7 7-8 for City. Declined ¼ cent.

BEEF was less active and scarcely so firm. Sales 400 bbls at $3.75 a $5 for Country Prime, $5 a $7 for Country Mess, $10 a $13 for plain repacked Mess, $13 a $15.50 for extra do. There is not so much wanted for export—sales to-day 400 tcs. at $24 a $25 for prime Mess, and $28 a $29 for India Mess. Slight advance, 50c per bbl for best.

BUTTER.—Holders are firm; but little stock is moving Very common and very choice grades are equally scarce. Choice yellow State firkins, 29c. a 31c.; Orange county choice yellow pails, 32c. a 34c.; fair to choice Michigan do., in shipping order, 23c, a 25c.; Grease, Butter, kegs and tubs, 11c. a 18c per lb. Advance of 3c. a 5c. on common and choice.

CHEESE.—Fancy State dairy, 14c. a 15c. per lb; fair to good do., 13c. a 14c. Ohio at 13c. a 14c.

BEANS.—The market is quiet. Quotations: $2.80 a $3 for Marrowfats; prime Kidneys, $2.80 a $2.90, and $2.65 a $2.70 for prime Mediums; mixed lots of Beans, $2 a $2.25; Pea Beans $2.70 a $2.75 per bush.

REMARKS.—Flour has come to a stand still, with a slight decline. Wheat inactive, do. Corn and Oats have made good advance with better prospects. Pork and Beef inactive. Butter advanced.

DETROIT MARKET PRICES,

Ending December, 21st, 1863.

Carefully corrected just before going to press, by

C. L. CROSBY & CO.,

Commission Merchants and Dealers in Fruits, and Western Produce generally. No 169, Woodward Avenue, Detroit, Mich.

White Wheat ₩ bush.		fair, prices unchanged	$ 1 40	@1 50
Red Wheat	do	do do	1 25	@1 28
Corn, Shelled,	do	excited and advanced	1 00	@1 03
do in the ear,	do	do do	0 85	@0 90
Oats,	do	advanced	0 64	@0 68
Rye,	do	do	0 90	@0 95
Barley, new	₩ cwt.	unchanged	2 37½	@2 50
Potatoes, Neshannocks,	₩ bu.	do	0 55	@0 60
do common	do	do	0 50	@0 55
Apples,	₩ bbl. winter fruit	do	1 50	@1 65
do dried	₩ bush.	do	1 25	@1 30
Seed, clover	do	advanced	7 00	@7 50
do timothy	do	do	2 00	@2 50
Beans,	do	do	2 20	@2 30
Onions,	do	unchanged	1 25	@1 37
Turnips,	do	declined & no sale	0 25	@0 30
Cider,	₩ bbl.	good supply	3 50	@4 00
Butter, fresh roll,	₩ lb.	active	0 20	@0 21
firkin,	do	do	0 19	@0 20
Venison,	do	in good supply	0 08	@0 10
Eggs	₩ doz.	advanced and scarce	0 2	@0 24
Pork, best dressed,	₩ cwt	active	6 00	@7 50
do	₩ bbl	do	14 00	@16 00
Beef, best dressed	₩ cwt	declined	2 50	@4 00
Mutton, dressed	₩ lb.	advanced	0 06	@0 07
do live	do	do	0 05	@0 06
Hides, green,	do	declined	0 05	@0 06
do dry,	do	do	0 15	@0 16
do green calf	do	do	0 13	@0 16
do dry	do	advancing	0 25	@0 30
Sheep Skins each		dull and declining	1 75	@2 75
Wool fine grade	₩ lb	inactive	0 68	@0 75
Canada coarse clean fleece		do	0 50	@0 60
Chickens dressed per pair		advanced	0 33	@0 45
do live	₩ pair	do	0 30	@0 35
Hay	₩ ton new and old	advanced & steady	18 00	@20 00
Cheese,	₩ lb	steady and advanced	0 12	@0 14
Corn Meal,	₩ cwt.	do	2 00	@3 25
Coarse middlings	₩ ton	advancing	20 00	@24 00
Salt,	₩ bbl.	declining	2 20	@2 45
Flour,	do	quiet and unchanged	6 50	@7 50
do buck wheat	₩ cwt.	declining	3 50	@4 00
Lard,	₩ lb	advancing	0 10	@0 12

WOOD Unchanged—Good Hickory, $4,50 *a* 5,00. Beech and Maple $4,00*a*4,50; mixed Wood Beech, Ash, &c., at $3,50*a*4,00. Green ranges from 20 to 30 cents lower than well-seasoned or dry. Trade brisk.

HOGS.—Dressed hogs have been very much excited for a few days, and have reached almost eastern prices, running to day as high as $7.25 a 7.75 for extra heavy. Market closing quiet with prospects of packers closing for a few days.

LARD.—Is quite active and prospects good for active prices.

BEEF.—Dressed has been very plenty and market well supplied from the country, with low prices the shortness of Coarse Grains and high price of hay, must soon advance the prices of good beef very materially.

BUTTER.—Market is not overstocked, but there is several lots being held at both prices, yet there is not much prospect of much higher rates at present, as much winter stock has been laidin.

Tenant Wanted.

THE Advertiser having business away, wishes a Tenant to live on his Farm, with or without land to cultivate. For particulars address TENANT, *Michigan Farmer Office.*

The property will be sold on very accommodating terms—a handsome "Eighty," House, Barn, Orchard, and Small Fruit, with the best of Water for family use, 18 miles from Detroit.

October 25th, 1863.

U. S. 5-20'S.

The Secretary of the Treasury has not yet given notice of any intention to withdraw this popular Loan from Sale at Par, and until ten days notice is given, the undersigned as "General Subscription Agent," will continue to supply the public.

The whole amount of the Loan authorized is Five Millions of Dollars. *Nearly Four Hundred Millions have been already subscribed for and Paid into the Treasury,* mostly within the last seven months. The large demand from abroad, and the rapidly increasing home demand for use are as the basis for circulation by National Banking Associations now organizing in all parts of the country, will, in a very short period, absorb the balance. Sales have lately ranged from ten to fifteen millions weekly, frequently exceeding three millions daily, and as it is well known that the Secretary of the Treasury has ample and unfailing resources in the Duties on Imports and Internal Revenues, and in the issue of the Interest bearing Legal Tender Treasury Notes, it is almost a certainty that he will not find it necessary, for a long time to come, to seek a market for any other long or permanent Loans, *the Interest and Principal of which are Payable in GOLD.*

Prudence and self interest must force the minds of those contemplating the formation of National Banking Associations, as well as the minds of all who have idle money on their hands, to the prompt conclusion that they should lose no time in subscribing to this most popular Loan. It will soon be beyond their reach, ad advance to a handsome premium, as was the result with the "Seven Thirty" Loan. when it was all sold and could no longer be subscribed for at par.

It is a Six per Cent Loan, the Interest and Principal payable in Coin, thus yielding over Nine per Cent. per annum at the present rate of premium on coin.

The Government requires all duties on imports to be paid in coin; these duties have for a long time past amounted to over a Quarter of a Million daily, a sum nearly three times greater than that required in the payment of the interest on all the 5-20's and other permanent Loans. So that it is hoped that the surplus Coin in the Treasury, at no distant day, will enable the United States to resume specie payments upon all liabilities.

The Loan is called 5 20 from the fact that whilst the Bonds may run for 20 years yet the Government has a right to pay them off in Gold at par, at any time after 5 years.

The Interest is paid half-yearly, viz: on the first days of November and May.

Subscribers can have Coupon Bonds, which are payable to bearer, and are $50, $100, $500, and $1000: or Registered Bonds of same denominations, and in addition, $5000, and $10,000. For Banking purposes and for investments of Trust monies, the Registered Bonds are preferable.

These 5 20's cannot be taxed by States, cities, towns or counties, and the Government tax on them is only one-and a-half per cent., on the amount of income, when the income of the holder exceeds Six Hundred dollars per annum; all other investments, such as income from Mortgages, Railroad Stock and Bonds, etc., must pay from three to five per cent tax on the income.

Banks and Bankers throughout the Country will continue to dispose of the Bonds; and all orders by mail, or otherwise, promptly attended to.

The inconvenience of a few day's delay in the delivery of the Bonds is unavoidable, the demand being so great; but as interest commences from the day of subscription, no loss is occasioned, and every effort is being made to diminish the delay.

JAY COOKE,
SUBSCRIPTION AGENT,
114 SOUTH THIRD STREET, PHILADELPHIA,
Philadelphia, November, 25, 1863.

☞ The brokers in New York are about to build an Exchange at an expense of $200,000.

THE OAKLAND COUNTY

Farmers' Mutual Ins. Comp.

Of Oxford, Chartered June 19, 1862.

CAPITAL, - - - $50,000

SURPLUS, - - - $2588 67.

THIS Company, unlike any other Farmers' Insurance Company, is restricted by its Charter to the Insurance of private dwellings and the usual outbuildings connected with them and their contents.

Owners of this class of property, especially the farming community desirous of insuring, must at once see the great advantages afforded them by a Company organized on this plan; it being wholly exempt from the heavy losses sustained by companies that include in their risks manufactories, mills, taverns stores, and other like hazardous property.

The Directors offer the following summary of the plan of operations:

1st. Risks will be taken only on private dwelling houses and the usual out-buildings connected with them and their contents.

2nd. No more than two thirds the value of any building insured.

3d. Personal property insured at its full cash value.

4th. No application for a longer term accepted than three years.

C. K. CARPENTER, A. A. STANTON,
WM. H. FULLER, LANSON PREDMORE,
NOAH TYLER, L. G. TANNER,
F. W. FIFIELD, *Directors.*

C. K. CARPENTER, *President.*
L. G. TANNER,
LANSON PREDMORE, *Vice Presidents.*
F. W. FIFIELD,

JOHN G. STANTON, *Secretary.*
WILLIAM H. FULLER, *Treasurer.* 1yr6b

C. RAOUX,

86 CEDAR ST., - - - NEW YORK CITY,

COMMISSION MERCHANT, AND

SOLE AGENT in the UNITED STATES,

For Messrs. JOHN STEWART & SONS, Nurserymen, Dundee, Scotland.

Mons. D. DAUVESSE, Nurseryman, Orleans, France.

L. DE LANGE, Florist, Haarlem, Holland.

Goods purchased and sold on Commission. Custom house and forwarding business attend to with economy and despatch.

REFERENCES.

EDWARD ROWE, Esq., Pres't Grocers' Bank, N. Y. City.
Messrs. DORD & Co., Importers, New York City.
" ED. HART & Co. Merchants, "
" ERNST & Co., Genesee Valley Nurseries, Rochester, New York.
GEORGE R. MUMMA, Esq., Dayton, Ohio.
Messrs. T. B. YALE & Co., Nurserymen, Rochester, N. Y.
S. B. MARSHALL, Esq., Prospect Hill Nur., Massillon, O.
J. E. ILGENFRITZ, Nurseryman, Monroe, Michigan.
Messrs. HOOPES & BRO., Cherry Hill Nursery, Westchester, Penn.
T. J. SHALLCROSS, Esq., Nurseryman, Locust Grove, Kent Co., Md. mayly

FRED. L. SEITZ & CO.,

BANKERS,

53 GRISWOLD STREET, - - - DETROIT,

PAY THE HIGHEST PRICE for Premium Funds, at all times. Buy Volunteer Relief Fund Orders and Wyandotte Script.

Sell Exchange on New York and all parts of Europe at lowest rates.

Land Warrants, State and United States Bonds bought and sold. *Swamp Land Certificates wanted.*

J. H. FARMER, M. D.,

DENTIST,

OFFICE ON MONROE AVENUE corner Farmer Street, one block north of the City Hall. Residence, No. 27 Farmer street, between Monroe Avenue and Bates Street.

DETROIT, - - - - MICHIGAN.

Teeth filled with Crystal Gold, Stannic Foil or Cement.

Teeth inserted on Plyota or set in on Plate of any kind that may be desired, either in full or in partial sets. All business in his line will be executed in a neat and satisfactory manner, and upon the most approved methods.

☞ *Premium taken at the State Fairs of 1861 & '62.*

Chester White Pigs for Sale

INQUIRE of JOHN MOSS, on PARK STREET, DETROIT (in the rear of *Rev. Dr. Duffield's Garden*), who will dispose of several Boars and one or two Sows, between three and four months old. Farmers will find it greatly to their advantage to cross their Stock with this admirable breed. The Pigs are of genuine breed, from stock imported by Dr. D., and can be had if applied for soon.

SOUTH DOWN BUCKS AND SUFFOLK PIGS.

THE subscriber has for sale several South Down Yearling and Buck Lambs. The yearlings are by *Tetherly* and *Tetherly*, imported by Mr. Morris, of Mountfordham. The Buck Lambs are by *Young York*, grandsire *York*, also imported by Mr Morris.

Also, several pair of Suffolk Pigs, from Stickney's Importation. The above stock is at the *Spring Brook Farm*, near the village of Farmington, Oakland county.

Address, F. E. ELDRED,
September, 1862. Detroit, Mich.

Chester White Pigs!

THE SUBSCRIBER continues to breed and ship to order Pure bred *Chester White Pigs.* Address

SETH A. BUSHNELL,
HARTFORD, Trumbull Co., Ohio.

WOOD SAWING MACHINE

PATENT FOR THE *GUIDE* APPLIED FOR.

Come and buy you a good wood sawing machine that will save you more hard work than anything else you can buy for the money. They are simple and cheap—costing

Only $100 for a good horse power and machine.

Ready to saw, with saw guide to steady the saw when entering the Log, and when out so that you do not have to stop the motion of the team, to roll up the Log and start the saw in, and everything complete, that can be worked with two or four horses, and saw twenty-five or thirty cords a day.

All manufactured at home, and can be repaired on short notice. Address,

BURNHAM & Co., AGENTS,
FARMER'S WAREHOUSE, - - BATTLE CREEK, MICH.

The Practical Shepherd.

A COMPLETE TREATISE ON THE

BREEDING, MANAGEMENT, AND DISEASES OF SHEEP.

By Hon. HENRY S. RANDALL, LL. D., Author of "Sheep Husbandry in the South," "Fine-Wool Husbandry," &c.

This work has been delayed, but is now completed, and ready for delivery to Canvassing Agents and persons ordering it by mail.

GOOD AGENTS WANTED

To sell the work in every Wool-Growing County in the Loyal States, Canadas, Etc. For Terms, which are liberal, apply to the publisher.

THE PRACTICAL SHEPHERD

Comprises 454 large duodecimo pages, is well illustrated, and by far the best and most complete work on sheep husbandry published in America, if not in Europe also. Price, $1.50. Copies sent by mail, post-paid, on receipt of price. Address,

D. D. T. MOORE, PUBLISHER,
ROCHESTER, N. Y.

A NEW GRUB PULLER.

PATENTED BY JOSEPH FREY, FEB. 3, '63.

An improvement over all others now in use.

SIMPLE, CHEAP AND DURABLE,

and will pull all ordinary sized GRUBS with one team as fast as you can haul them.

☞ Territory and Machines for sale at the

FARMERS' WAREHOUSE,
October 25th, 1862. BATTLE CREEK, Michigan.

☞ During the month of September, 1,189 deserters were arrested, in the U. States.

TO FARMERS AND STOCK BREEDERS

ALL HAIL THE TRIUMPH THAT

Fickardt's Cattle Powder

HATH ACHIEVED!

THOUSANDS ARE TESTIFYING TO ITS EFFICACY!

"The merciful Man is kind to his Beast."

AFTER years of study and experiment by the inventor to compound *from pure Vegetable materials* a Powder that *should* and *must* take the place of the thousand and one nostrums gotten up and palmed upon the public as *"certain remedies"* for the cure of all diseases which the brute creation are "heir to," he has produced the one heading this advertisement, and none *can be genuine* unless bearing our FAC SIMILE signature. The demand has been such that its sale has been chiefly confined to the State of Pennsylvania, but we have now consummated such arrangements that we are prepared to supply the numerous orders now on hand, as well as those we may hereafter receive from other States of the Union.

Knowing this Powder to possess all the curative properties here set forth, we deem a fulsome tirade of words unnecessary, feeling assured that *its own merits* will secure for it a ready sale. Being composed of pure vegetable ingredients, it can be safely and judiciously given to that noble animal the HORSE. It effects are no *false pampering* of the system, creating a bloated carcass with a premature shedding of the hair; but on the other hand, it strengthens the the digestion, purifies the blood, regulates the urinary organs, thereby improving and invigorating the whole *physical* condition of the animal even when in an apparently healthy state.

To the Agriculturist and Dairyman it is an invaluable remedy for their GREAT CATTLE DISEASES under HOOF diseases,—HOLLOW HORN, and other of the many complaints to which they are liable from a suppression of the natural secretions.

MILCH COWS are much benefitted by occasionally mixing with their slop or feed—It has a tendency to strengthen the animal, remove all obstructions from the milk tubes, promote all the secretions, and consequently adding much the health of the animal, and quantity and quality to the Milk, Cream & Butter.

HOGS, during the warm weather are constantly overheating themselves, which results in their getting Coughs, Ulcers of the LUNGS and other parts, which has a natural tendency to retard their growth. In all such cases a teaspoonful mixed in a bucket of feed and given every other day will speedily remove all difficulties, and the animal *will soon increase in both Health and FAT.*

TESTIMONIALS.

WASHINGTON, Jan. 1, 1853.

To William Ralston:

I have used your Cattle Powder, and would state that it possesses the qualities of toning and renovating the stomach, removing it some morbific matter. I can recommend it for all horses in private use, where the system is not too much debilitated.

J. P. TURNER, *Veterinary Surgeon,*
For the United States Government,
Washington, D. C.

WASHINGTON Oct. 16, 1852.

Wm. Ralston:

Dear Sir—Having tried the Cattle Powder, manufactured by you, I consider it a good article for the diseases of Horses, and as good a preparation as there is in the market.

HIRAM WRIGHT, *And Veterinary Surgeon,*
For the United States Government.

WASHINGTON, Oct. 21st, 1853.

Wm. Ralston:

Dear Sir,—Having had your Horse and Cattle Powder in use for some time, I most cheerfully recommend it as a good article and well worthy of public notice.

M. JACKSON,
Superintendent of the Mule Corral.

Wm. Ralston:

We have tried the Horse Powders manufactured by you, in the Corral and Hospital stables to some extent. It it highly recommended to me by the Superintendent and Veterinary Surgeon in charge.

C. M. SNOW, *Gen'l Sup't.,*
Ass't Quartermaster's Office, cor. G and 2d st.
Washington D. C.

FROM Baltimore Co. Md., May 20th, 1853.

The undersigned, for some time past, has had in use on his farm, "Fickhardt's Cattle Powder," and from the beneficial effects derived from it, takes pleasure in recommending the article to all Farmers, as a valuable preparation, to be given to Horses and Cattle. Some of my best work horses, that were or bad health, with little or no disposition for food, on their taking "Fickhardt's Cattle Powder," soon recovered their appetite, and in a short time became fat and in a short time became fat and in good condition.

HENRY B. CHEW.

PHILADELPHIA, May 16, 1855.

Wm. Ralston, Esq.:

Dear Sir—It is with pleasure that I certify to the invaluable properties of your Cattle Powder. I have been using it for nearly eight months. In last June I was travelling, my horse became very sick, so bad that I had to return home, and apply to a Farrier. It was nearly ten months before he was fit to use, he being in such a low condition I happened to stop in at Mr W. White's, and saw your Cattle Powder. I made up my mind to try a package, and after using two of them, it was surprising to every one who saw the horse, to see how much he had improved in flesh and spirit. Those who had seen him before he became sick could scarcely believe him to be same. I also recommend the Powders as being a fine thing for the urine, and also to improve the coat, as it gives it a fine, silky appearance. My friends seeing the advantage of it, have commenced using it among their Cattle. No person should be without in their stables. I have seen it fully tested, and consider it one of the best articles in use.

Yours very respectfully,
GEORGE SNYDER.

We, the undersigned, have used your Powder, at the request of our friend, George Snyder, and find it very useful among our cattle.

PETER OTT,
JACOB OTT,
A. G. KEISS,
Lower Merion, Montgomery county, Penn.

PRICE 25 CENTS PER PACKAGE.

AGENTS.—T. & J. Hinchman, 120 Jefferson Ave., DETROIT; D. S. Barnes & Co., 202 Broadway, New York, Dyott & Co., No. 232 North Second street, Philadelphia

For sale by all Druggists and Dealers. nov6m

LIEBIG'S

GREAT WORK ON AGRICULTURE

D. APPLETON & CO.,

443 & 445 BROADWAY, - - NEW YORK,

HAVE JUST PUBLISHED

THE

Natural Laws of Husbandry

By JUSTUS VON LIEBIG,

EDITED BY

JOHN BLYTH, M. D.,

PROFESSOR OF CHEMISTRY IN QUEEN'S COLLEGE, CORK.

1 vol., 12mo. Cloth. 387 pages. $1,50.

Chap. I. The Plant.
Chap. II. The Soil.
Chap. III. Action of Soil on Food of Plants in Manure.
Chap. IV. Farm Yard Manure.
Chap. V. The System of Farm Yard Manuring.
Chap. VI. Guano.
Chap. VII. Poudrette. Human Excrements.
Chap. VIII. Earthy Phosphates.
Chap. IX. Ground Rape-Cake.
Chap. X. Wood-Ash.
Chap. XI. Ammonia and Nitric Acid.
Chap. XII. Common Salt, Nitrate of Soda, Salts of Ammonia, Gypsum, Lime.

The work is especially adapted to the promotion of Agriculture, and should be read by all intelligent Farmers throughout the country.—*Rochester Democrat and American.*

This Volume should be studied by all cultivators of the soil as treating of their business in the fullest and most enlightened manner, and to the men of science it presents much that is of general interest.—*Boston Traveller.*

Sent to any address in the UNITED STATES, FREE OF POSTAGE, on receipt of the Price.

☞ We have received *Godey's Lady Book, Arthurs Home Magazine, Frank Leslies* and the *Atlantic Monthly* for August and December, they are teeming with variety. For sale by Roys, Newsdealer.

SPLENDID PREMIUMS FOR 1864!

THE MICHIGAN FARMER.

ONE OF THE LARGEST AGRICULTURAL MONTHLIES IN THE UNITED STATES—CONTAINING 48 Pages

FARMERS SUPPORT YOUR OWN HOME PAPER!

GREAT INDUCEMENTS OFFERED.

For every New $1 Subscriber, A LARGE POCKET WAR MAP, containing 84 Pages

Of valuable statistical information relative to every Battle and all the general events of the War. It should be in the hands of every man, as it embraces much reliable and valuable information which cannot be readily obtained from any other source. Send a subscriber and get it.

Or 25 STRONG TRIOMPH D' GAND STRAWBERRY PLANTS,

To be sent in time for SPRING Planting, with instructions as to Soil, &c.

Largest Number of Plants ever offered for One Subscriber!

Old patrons can have *either* by paying for eighteen months, $1,50 *in advance.*

FOR THREE $1 SUBSCRIBERS,

A DELAWARE GRAPE VINE,

One of the newest, best, earliest, hardiest and most productive known in Grape Culture. This variety is one of the finest flavor for table use, and should be in every man's garden. We will send them by mail at the proper season. Try and secure one, as there are very few *true* Delaware Grapes in Michigan. Or *Two of the fine, large, hardy* CONCORD GRAPE VINES.

AIKEN'S KNITTING MACHINE, at $75,00

Is also offered as a FIRST Premium for *the Largest List of not less Fifty New Subscribers.* This most wonderful piece of mechanism will knit Silk, Cotton, Worsted or Woolen Scarfs, Clouds, or Stockings in the most even and beautiful style, (in any or all colors,) and superior to any *hand work.* It runs

6000 STITCHES PER MINUTE!! or A PAIR OF STOCKINGS IN TWELVE MINUTES!!

We have done this with the Machine now on exhibition in the *Michigan Farmer* office, which we offer as a Premium. The largest list of new $1 subscribers takes this useful Household Prize. It will easily KNIT FORTY PAIR OF STOCKINGS PER DAY!!

2d BEST LIST, of not less than 50, ONE HUNDRED STRONG CONCORD GRAPE VINES

3d do do 30, ONE PAIR PURE-BRED CHESTER WHITE PIGS.

FOR SIX NEW ONE DOLLAR SUBSCRIBERS,

"LIEBIG'S NATURAL LAWS OF HUSBANDRY," or "THE PRACTICAL SHEPHERD,"

The first is one of the most thorough works upon Agriculture ever produced in any language, Liebig as a scientific man has a world-reknown; the other by Randall, is the best work ever published on Sheep, in the U. States. They should be in the hands of every Farmer in Michigan.

FOR EVERY TEN NEW $1 SUBSCRIBERS,

1 "Natural Laws of Husbandry," 1 Delaware, 2 Concord Grapes, & 50 Straw'y Pl'ts

FOR FIVE PREMIUMS ON 10 NAMES!

FOR SEVEN NEW $1 SUBSCRIBERS,

200 Triomph d' Gand Strawberry Plants, or 2 Delawares,

Or a copy of Mrs. L. D. Adams beautiful book, entitled "SYBELLE, *and other Poems.*"

CLUB RATES.

1 copy,	(one year)	$1 00 in advance
5	"	" 4 00 "
8	"	" 6 25 "
10	"	" 7 50 "
15	"	" 11 00 "
20	"	" 14 00 "

25 copies	one year	17 00 in advance
30	"	20 00 "

Thus it will be seen that our terms are extremely low and within the reach of all, as a club of thirty get the *Farmer for sixty-eight cents a year each!*

WILLIAM S. BOND, } *Publishers.*
GEORGE SNYDER, }

DETROIT, November, 1863.